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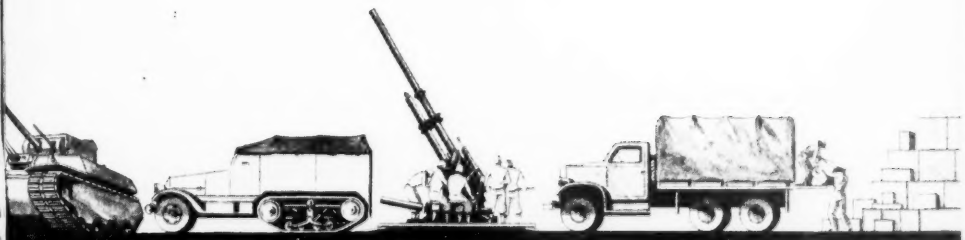

COMMAND AND GENERAL STAFF SCHOOL

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XUM

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COMMAND AND GENERAL STAFF SCHOOL

MILITARY REVIEW

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The Army Industrial College

BRIGADIER GENERAL DONALD ARMSTRONG, *United States Army*

INDUSTRIAL power is the indispensable basis of military power. We learned that lesson in World War I. But we also learned that the potential of vast industrial resources is valueless without an effective organization and careful plans for translating this potential into dynamic production. If the chaotic confusion of mobilizing industry in 1917-18 was not repeated in World War II, at least within the War Department operations, there was a good reason for this comparative success. The War Department had devised an organization and had prepared an industrial mobilization plan for instant use if and when the need arose. Therefore, future historians will be able to record at least one instance where the aphorism that we learn from history that we learn nothing from history does not apply. It is hardly necessary to add that nobody insists that the industrial mobilization of this war was faultless and could not be improved. Future analysis must uncover the reasons for such failures as marred or delayed the industrial effort in this war.

The admitted success of Army-Industry teamwork since September 1940 is not fortuitous. It happened that way because the Army had decentralized its procurement planning, because Army officers and industrialists had been in contact with each other for several decades before Pearl Harbor, and because over a thousand officers of our Army had been trained for this work by the Army Industrial College. For the Assistant Secretary of War, now known as the Under Secretary of War, had supervised and encouraged the work of his Planning Branch, which was an industrial general staff, and of his Army Industrial College, which taught the principles of industrial mobilization. To both these organizations, and to the Technical Services which put theory into practice, rightfully belongs much of the credit for the success achieved on the industrial front in this war.

The American people as well as the Army itself have accepted as a matter of course the Under Secretary of War and his functions, and the Army Industrial College, which helps to implement these functions. They have yet to realize that no foreign army had or has a counterpart of either the Under Secretary of War as the official supervisor of industrial mobilization or a school like the Army Industrial College. The United States Army has frequently made innovations in technical and tactical phases of warfare. This, however, is an instance where the Congress and the Army can take much credit for a major military innovation and for farsighted appreciation of the social and economic implications of modern war, and of the grand strategy of industrial preparedness.

Nearly twenty-five hundred years ago Sun Tzu wrote that "the art of war is of vital importance to the state. It is a matter of life and death, a road either to safety or to ruin. Hence it is a subject of inquiry which can on no account be neglected." Today this truth is gaining greater acceptance in this country. We realize too that the meaning of the term "art of war" must be greatly expanded to include realms of national activities not dreamt of in antiquity. Furthermore, the art of war has developed in many of its phases into a fairly exact science. For example, the mobilization of industry at the outbreak of a war and its demobilization at the victory can be made the subject of scientific research and analysis. Let us emphasize the point that in the United States the only agency within all the executive departments charged by legislative mandate with the study of the mobilization of industry and hence with its subsequent demobilization is the Office of the Under Secretary of War with the Army Industrial College.

The present activities of the Army Industrial College should hearten the people of this country. The Under Secretary of War, Judge Robert P. Patterson, on 3 January 1944, re-established this Army school for a specific and limited objective. No longer as in the years before Pearl Harbor does the Army Industrial College have the leisure to offer a liberal education in the economics of war that include the mobilization of industry and

an efficient use of our national resources. The present needs are urgent. Now the College is a four-weeks vocational school, which, by constant reiteration of its purpose to get labor and industry of the nation out of war production with the maximum speed, as soon as the victory is won, proves that it is conscious that the Army is a social institution with social responsibilities. Gone forever from the military mind are the narrow and separatist tendencies inspired by the former isolation from the civilian community. The Army firmly believes that after it has won a military victory in Europe and the Pacific it must help ensure an economic victory on the home front.

The Army Industrial College has nearly come of age. In February 1924, by order of the Secretary of War, John W. Weeks, War Department General Order No. 7 contained the following provisions:

> A college, to be known as the Army Industrial College, is hereby established for the purpose of training Army officers in the useful knowledge pertaining to the supervision of procurement of all military supplies in time of war and to the assurance of adequate provision for the mobilization of matériel and industrial organization essential to wartime needs.
>
> Direct supervision and control of the Army Industrial College are vested in the Assistant Secretary of War.

The Assistant Secretary of War was Mr. Dwight F. Davis and the first commandant of the Army Industrial College was Colonel Harley B. Ferguson, Corps of Engineers.

What were the basic reasons for setting up this course of instruction? The students in the College quickly learned why such a step was considered essential for the safety and future welfare of the nation. Early in the course they were required to analyze carefully the reasons for the failures to meet production schedules in war materials in 1917 and 1918. It was evident that there had been many weaknesses and deficiencies in the Army's estimate of the economic situation. Army officers in general knew little or nothing about American industry, with the exception of an extremely small minority in the Technical Services. Furthermore, there was little comprehension of the role of industry and labor, transportation and utilities, mines and farms in the successful conduct of war. There was severe competition between the Technical Services of the Army, between the Army and Navy, and between our own war requirements and the needs of the civil population and our Allies. Ultimately the War Industries Board under Mr. Bernard Baruch coordinated the requirements of all these competing members of the community, but order came out of chaos only towards the end of the war as a result of this organization.

In short, in the first World War the Army was ignorant of our industrial resources, had no plans for employing the factories on production for which they were best adapted, knew little or nothing of inevitable shortages in raw materials and the effect on civilian and military economy of such deficiencies, nor did it realize the need for coordination and control in the production program. It concentrated control and centralized operations in Washington until the overloaded machinery nearly came to a complete stop. Eventually operations were decentralized and this solved the problem of effective administration to meet military production requirements.

All these things the students learned, and their eyes were opened to the dangers of defective organization and unplanned procurement. Criticism of our World War experience was constructive, however, with the purpose of devising ways and means to avoid a repetition of such disastrous inefficiency in any future war. How well the graduates learned their lessons is clear from the record of World War II.

Against this background of mistakes to be avoided and of conditions to be remedied in procuring munitions and in utilizing the nation's economic resources, the student acquired a basic knowledge of business fundamentals. This was a rapid survey in eight weeks of pertinent principles of economics, of the use of statistical methods in control, and of enough accounting to enable the student to

appreciate its usefulness as a tool of management. He also learned the difficulty of determining production costs. After examining essential phases of private and governmental finance this basic instruction concluded with several weeks study of the principles of organization and management.

The remaining months of the course were devoted to a multitude of subjects which were considered required knowledge for the officer who was destined to direct a procurement district or occupy an important staff position in a Technical Service. The scope of the instruction extended from the current theory and practice of government and the war powers of the President and Congress, through the organization of the War and Navy Departments, the analysis of basic industries and strategic and critical raw materials, and many other kindred subjects to an investigation of the industrial mobilization plan itself. The industrial resources of our own country were thoroughly studied, but the course went much further in its examination into the economic resources of all foreign countries. The work of the College included research projects within the scope of its assigned objectives, visits to many industrial plants, and many lectures by eminent industrialists, economists, and authorities on subjects studied in the course.

The breadth of the Army Industrial College curriculum is noteworthy. Only officers of experience and better than average efficiency could be admitted. The Army officers selected for the College came from the following groups:

1. Graduates of the Army War College.

2. Graduates of the Command and General Staff School with General Staff eligibility.

3. Officers of outstanding ability possessing special qualifications for Army Industrial College training.

In all cases, officers selected were required to have a general rating not below excellent. The age limits were set for Lieutenants, forty; Captains, forty-five; Majors, forty-nine; and Lieutenant Colonels or Colonels, fifty-two.

It is particularly noteworthy that as early as 1925 Navy officers and line officers were included in the stude body, and eventually many of them were members of the faculty. The inclusion of these officers from the line of the Army and the Navy has resulted in much improved teamwork and better mutual understanding of the problems of modern warfare.

The methods of instruction have been well summarized by the former Commandant of the Army Industrial College, Colonel Francis H. Miles, Jr., who was assigned the duty of reopening the College in January 1944. He states in describing plans for the future:

"The Army Industrial College has always been conducted on an open forum basis in which free expression of constructive thought has been advocated. It is felt that this free forum should be continued. The indoctrination is sought through the force of logic rather than through any attempt to regiment thought. Nevertheless, essential indoctrination is obtained by this method. The courses will be divided into problems, each problem to be covered by a directive, and an orientation by the instructor controlling the course is given before starting each problem. Each problem requires discussion and a solution with recommendations. Certain bibliography is presented to the student but his research is not confined to this bibliography. The incorporation of a student's own ideas is invited. After the problem has been closed and the papers have been reviewed by the instructors, a critique is held by the instructor in charge of the course. Certain problems are solved by committees rather than by individual students, and much of the value of the course comes from the interplay of thought between the different students when conducting such committee problems."

The Army Industrial College suspended operation in December 1941 because its staff was needed for actual operations in the War Department and officers could not be spared as students in the course of instruction. Towards the end of 1943, however, the need for trained

officers for demobilization became evident, and the Under Secetary of War decided to reopen the Army Industrial College. A board was appointed to study the organization of the College and to determine the subjects to be included in the curriculum. As a result the Army Industrial College was officially reopened by War Department Circular No. 337, 1943. It is now a General Service School, functioning under policies established by the Under Secretary of War, transmitted through the Assistant Chief of Staff, G-3, War Department General Staff.

At present the instruction must be directed to the specific objective of teaching officers how to apply the laws and the regulations governing the termination of contracts and the disposal of surplus property. This course now covers a period of four weeks with an average number of approximately three hundred carefully selected officers and civilian employees of the Army, Navy, and many civilian agencies such as the Reconstruction Finance Corporation, War Production Board, Smaller War Plants Corporation, Maritime Commission, and the Treasury Department.

How important are these problems of contract termination and property disposal? They are so large that if they are handled badly, they might wreck the national economy and cause a depression that would make 1929 and its aftermath fade into insignificance. The War Department has already terminated contracts having a face value of over eighteen billion dollars. Half of this amount has been settled, and half remains to be settled. On VE-day it is expected that there will be a large increase in the number and amount of terminations. The other essential requirement for turning industry back to normal production is the disposal and actual physical removal from plants of machine tools and other production equipment, work in process, scrap, and materials of all sorts. Trained personnel is needed to speed up both these procedures to prevent large-scale unemployment and a severe deflationary cycle. The mission of the Army Industrial College today is to train personnel for these purposes. About fifteen hundred graduates are already at work in the field with reports indicating good results from the training obtained at the Army Industrial College.

In pre-war days a vast store of information on military economics had been accumulated as a result of research by student officers. These data have been of inestimable value to many War Department agencies since the beginning of this war, and have been utilized frequently in making plans and decisions. The field covered, however, was by no means sufficiently extensive nor were the subjects completely studied nor integrated into a final result. Therefore, in reopening the Industrial College there was established a Department of Research of equal importance with the Department of Instruction.

While the director and deputy director of the Research Department are Army officers, all other members are civilians. The civilian character of the Department is emphasized because of the importance of continuity of research in the development of an industrial mobilization plan. The research analysts are well educated, experienced specialists in the various fields which form the basis of such a plan.

Research is divided into eight separate divisions:

1. The Economic Studies Group explores general economic problems of the United States and other nations with reference to mobilization of natural resources and industry, economic warfare, and belligerent occupation.

2. The Industries Studies Group is concerned with research into the key industries and manufacturing facilities of the United States.

3. The Civilian War Agencies Group examines the war functions of civilian war agencies and evaluates their effectiveness in wartime.

4. The Material Studies Group analyzes and appraises economic information related to raw materials, including those obtained from agriculture and mining, with special reference to essential and strategic commodities in the internal economy of the United States.

5. The Civilian Requirements Group is

charged with the research necessary to determine the basic requirements for the civilian economy during periods of mobilization and war.

6. The Manpower Studies Group is concerned with the analysis and synthesis of existing data dealing with labor forces under conditions of mobilization and demobilization (conversion and reconversion).

7. The Foreign Resources Group investigates and evaluates the economic capacity of any political entity or geographical area to conduct warfare with special reference to its strategic relationship to the United States.

8. The Military Requirements Group is responsible for the preparation of studies of general and specific matériel and personnel requirements for all branches of the Armed Forces.

The Liaison Office establishes communication between the Department of Research and other agencies and maintains close association with rosters of industrial and professional personnel for the manning of emergency agencies.

This organization does not engage in primary research. Its purpose is to carry out secondary research, to collect from governmental and civilian research agencies and to utilize for the objectives of the Army Industrial College all available data that concern the mobilization or demobilization of our economic resources. Therefore, its efforts in no way duplicate the study made anywhere else in the country.

The Army Industrial College promises even greater usefulness to the nation and to the Army and Navy when the lessons of World War II are analyzed and applied. One of the most valuable results to the Army from the experience of the Spanish-American War was the founding of the Army War College. By its studies of strategy and grand strategy, its contribution to the success of our arms is incalculable. Out of World War I came the founding of the Army Industrial College. The great advantages derived from this innovation are not yet generally perceived either by the Army or by the country at large. But by its indoctrination in the strategy of materials, its contribution to victory in this war is of enormous importance. Its lessons learned well have saved thousands of lives of front-line soldiers and probably billions of dollars. The Army Industrial College can justifiably be proud of its past and present. It looks to the future with confidence in its destiny.

Every situation encountered in war is likely to be exceptional. The schematic solution will seldom fit. Leaders who think that familiarity with blind rules-of-thumb will win battles are doomed to disappointment. Those who seek to fight by rote, who memorize an assortment of standard solutions with the idea of applying the most appropriate when confronted by actual combat, walk with disaster. Rather, it is essential that all leaders—from subaltern to commanding general—familiarize themselves with the art of clear, logical thinking. It is more valuable to be able to analyze one battle situation correctly, recognize its decisive elements, and devise a simple, workable solution for it, than to memorize all the erudition ever written of war.

—*Canadian Army Training Memorandum, No. 26*

A Liaison Net That Worked

MAJOR W. W. PROUT, *Cavalry*

The author landed with Headquarters Eastern Assault Force in Algiers on 8 November 1942, and from January to May 1943 he was with Headquarters 34th Division in the North African campaign. He saw service in the Italian campaign from September 1943 to May 1944, including the follow-up at Salerno, the Volturno crossings, Cassino, and Anzio, and during this time he was in charge of the liaison team for the commanding general.—THE EDITOR.

EXPERIENCE in the North African campaign proved once more the vital necessity of continuous control and a steady flow of information from subordinate units to higher headquarters. When a division is operating, either separately or with its component units, on a task force basis, and in rapidly moving situations, the normal command net and liaison, as authorized by tables of organization and equipment, are often inadequate.

Perhaps this is partly due to the usual procedure followed in the selection of liaison officers. Too often, when regiments and separate battalions are called upon by higher headquarters to furnish liaison officers, the harassed commander regards the request as just one more stumbling block in his already difficult path, and is very apt to send the man least needed, rather than the best man for the job. However, the subject of selection and training of liaison officers is open to considerable debate, and plays a secondary part for the purpose of this discussion.

Too often it was found that liaison officers did not have a proper background to enable them to keep their own commanders informed of the division or corps situation, as the case might be, nor were they able to furnish the higher headquarters to which assigned the proper information on their own units. With the serious shortage of trained officer personnel at the beginning of the Tunisian campaign in the late winter of 1942 and spring of 1943, liaison officers were either heavily overburdened, if they were the type of aggressive liaison officer which is in demand, or were totally overcome by their job and consequently were of little use either to higher or subordinate commanders.

When the 34th Division relieved a French division at Pichon, Tunisia, in February 1943, the division was assigned to the French 19th Corps, which was, in turn, a corps of the First British Army. The division was furthermore employed on a frontage which was quite fantastic, according to all principles and teachings, and each combat team was operating on a separate task force basis. In addition to the normal units of the division, there were attached a tank battalion, a tank destroyer battalion, and an antiaircraft battalion. The necessity for highly trained and thoroughly competent liaison officers was immediately evident.

The problems of control which confronted the division commander were extremely serious. Regiments were widely scattered, and within regiments battalions were again widely scattered. It was almost impossible to find covered areas to bivouac large units, and since the Luftwaffe had practically complete air superiority, dispersion and cover were of utmost importance.

We were fortunate in having a group of officers who had worked closely with the British and who were familiar with the British staff procedure. We were not so fortunate, on the other hand, in having anybody familiar with the French staff procedure, and in addition there was the difficulty of language. The requirements were obviously very stiff on our liaison officers.

Shortly after we went into our first action a detachment of the British Phantom organization reported directly to the commanding general, and with them the idea of our own liaison section began.

The Phantoms were an organization especially trained to function as the eyes and ears of the army commander. A detachment consisted of an officer and several enlisted men trained in radio procedure, encoding,

and radio maintenance. They moved about in an armored car, carried their own rations, did their own cooking, and were, in fact, a self-contained and self-sustaining unit.

Each division in the army and certain critical areas were covered by a Phantom officer who made direct reports by radio to army headquarters, and in turn monitored the net in which he was operating. The result was that the army commander and his subordinate commanders were kept informed of the situation on the army front at all times. The attachment of Phantom teams was entirely arbitrary, so that the Phantom officer was constantly moved along the army front to cover the most important actions and critical points.

They did not in any way obviate the necessity of normal liaison, nor did they exercise any command function, either on their own initiative or as agents of the army commander. Their entire training and purpose was one of information. While the Phantoms were attached to us we were always able to know the general situation, and in such a manner were able to foresee future actions in many cases and begin to formulate tentative plans even before the issuance of orders by the corps and army.

When the Tunisian campaign ended and the American troops in North Africa were faced with the certainty of amphibious operations in southern Europe, the 34th Division was moved to a training area, refitted, re-equipped, and given replacements. We were given an additional officer over-strength which enabled the division commander to build the liaison section which he had long needed and which he had long envisaged.

A group of experienced officers, most of them of field grade, were selected and assigned to a provisional liaison section in division headquarters. These officers had all exercised command in the field, were thoroughly familiar with staff procedure, and were thoroughly conversant with the tables of organization and equipment of the division and knew, as well, any discrepancies or individual characteristics of armament, strengths, and equipment of the various units within the division. The commanding general felt it imperative that every liaison officer know the exact number and type of weapons in all units of the division, since the division was on a task force basis and had many items not found in tables of equipment and TBA.

The moment the division began training, a special training program was started for the liaison section under the auspices of the G-3 and the division signal officer. Early training included a thorough drill in radio telephone procedure, instruction in the use of various types of radio sets, and even included elementary problems of maintenance.

The signal company converted a group of quarter-ton trucks from a six-volt system to a twelve-volt system, and installed SCR 193 radios in each vehicle. A driver, who was a relief radio operator, and a radio operator were assigned to each radio car to work with the liaison officer, both in training and throughout operations. In this way, operators and officers became thoroughly familiar with each other and with the methods of operations within the liaison section.

During this training period several imaginary situations were drawn up by the G-3 in conjunction with the chief of the liaison section, and a series of command post exercises were held. At the end of the CPX phase all liaison officers, drivers, and operators were thoroughly competent and thoroughly drilled in standing radio operating procedure and were able to handle a very large volume of traffic, including encoding and decoding of all messages. For purposes of security a cipher device was used, and the cipher key and call signs of the various sets in the liaison section were incorporated in an annex to the division SOI [signal operations instructions]. Call signs and cipher keys changed daily.

The mechanical problems were the most easily solved, and the major problem throughout the training period was to inculcate in both liaison officers and subordinate commanders the division commander's conception of the duties and proper uses of this highly trained section. A series of joint conferences were held with the liaison section, division

staff officers, and subordinate commanders, in which the following points were stressed:

> The functions of the liaison officer were primarily two-fold: (1) to keep the commanding general and staff promptly and rapidly informed of the G-2, G-3, and G-4 situation of the unit to which assigned; and (2) to be completely informed of the plan and intention of the division commander so that he could keep the unit commander to which attached periodically informed of the division and in some cases even the corps situation.

In a normal situation, liaison was established to the troops on the left and right of the division as well as to the subordinate units in the division and division headquarters. All sets operated in one channel and all sets were monitored twenty-four hours a day, so that the commanding officers of all units were constantly informed of the general and special situation. Great emphasis was placed on the form of reports going to subordinate commanders as well as to division headquarters. Brevity, conciseness, and fact were highly stressed.

It is obvious that traffic was to be kept at a minimum at all times, because with so many sets operating in one net the volume of traffic in an active situation or during a corps attack grew to a tremendous proportion, despite all efforts to keep it to a minimum. To insure this control and to maintain speed of communication, only the trained operators and officers in the net were allowed on the air. Liaison officers were trained to report facts and to check the veracity of information to their complete satisfaction. They were encouraged to check the source of information as to reliability. They were not to question, however, statements of unit commanders to whom they were attached, nor were they under any circumstances to send conclusions unless they were the considered evaluation of the regimental commander, and so stated. In general, during a quiet or relatively quiet situation, periodical situation reports were submitted, and emphasis was placed on the necessity of submitting negative reports in cases where there had been no change since the previous report. In every case, messages were to be specific.

From the point of view of the unit commanders, they were given to understand at the outset that the liaison officer was a trained, competent staff officer, an agent of the division commander, and was assigned as an aid to the unit commander and not as a spy from the higher headquarters. Unit commanders were encouraged to consult with liaison officers in case of doubt as to the interpretation of orders or the intention of the division commander. They were encouraged to confide in the liaison officers as to their own plans, intentions, and situation. They were specifically entreated not to use this liaison section as messenger boys or to carry orders back and forth, except in an extreme emergency, and were also requested not to use the liaison net as merely an additional means of communication, except in an emergency.

Although the liaison officer had to be aggressive in order to be effective, he was told that he must be diplomatic and pleasant, and must abide strictly by the wishes of the unit commanders. Obviously, if friction arose between liaison officers and unit commanders, the liaison section was a failure.

Some unit commanders felt that the liaison section was unnecessary and redundant, that its function would merely mean a duplication of normal reports, and that their own unit liaison officers were able to carry on all the necessary functions of liaison. This, however, was not true. The liaison system, as conceived by the division commander, in no way replaced normal reports, nor did they preclude the reports of subordinate units and subordinate unit liaison officers through normal channels. The reports of the division liaison section, by the very nature of the radio net, went to all units and was a service of information. The more formal written reports and situation reports exchanged between units and division by the unit liaison officers were always official, and confirmed or served as a check on the initial reports by the division liaison section. There was,

furthermore, justification for this duplication in that the time of reaction was so much quicker than through normal message center channels that the speed of transmission and its consequential operational effect more than justified any complaints as to duplication of effort.

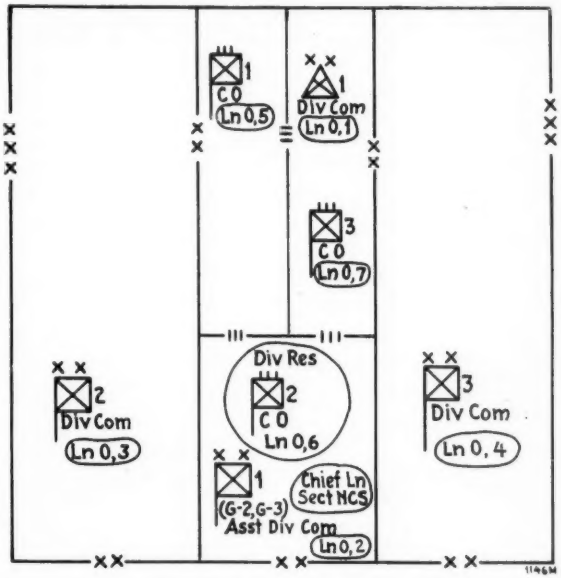
As has already been mentioned, a liaison team consisted of one officer and a driver-orderly, transported in a quarter-ton truck, with a small stove, rations, and bedding for the liaison party. A second quarter-ton truck, with a driver-operator and operator, carried the radio. The sketch shows a typical setup with a liaison team attached to each combat team of the division, one to the headquarters of each unit adjacent to the division, one to the assistant division commander, one at the division command post in direct communication with the G-2 and G-3 sections, and one operating with the commanding general's party.

During operations in the 34th Division, command was exercised by small command groups operating well forward from OP's or advanced CP's. In most cases the division commander with a representative from the G-2, G-3 section, and a liaison officer occupied an advanced observation post with the division artillery commander or his representative. In the majority of cases this OP was located in the sector of the regiment making the main effort, and it was usual for the regimental commander to spend a large part of his time with the division commander at the OP. Often it was necessary for the division commander to go forward to make a personal reconnaissance or to influence the action by his own presence at a battalion or company command post. Wherever he went he took his liaison radio with him.

In many cases, due to the difficulty of terrain and restrictions on movement due both to terrain and enemy action, the radio could only be brought forward to within 200 or 300 yards of the observation post, in which case the radio was operated either by remote control or relayed by the operator through sound power telephone to the observation post.

Although some unit commanders were not enthusiastic about the liaison section at the outset, after a very short time in action all agreed that it was extremely valuable, that all commanders concerned had a far better up-to-date picture of what was going on, and felt that they never wanted to lose this valuable information agency again. In several instances operators and officers became casualties, and the value of thorough prior training and planning became immediately evident when other members of the liaison team were able to make minor repairs on the radio and continue operation until relief could be effected.

There were occasions when, due to difficulties of terrain or in the periods preceding a surprise attack, radio silence was neces-



TYPICAL ATTACHMENT OF LIAISON TEAMS FOR COMBAT. FIG. 5

sary for counterintelligence purposes, and radio could not be used. We felt that it was unfair to burden the already overburdened telephone operators with the additional traffic of the liaison net, and therefore looked about for some other method of communication. However, we were spared embarrassment by modifying a few sets of telegraphic keys and using the telephone wires to send telegraphic messages. In this manner we were able to use wire already on the ground without interfering in any way with the telephonic communication.

When the division landed in Italy in the follow-up convoy at Salerno, our liaison section had its first test. The enemy withdrawal to the north had begun and the army commander wished to inaugurate an immediate vigorous pursuit. Due, however, to a high wind which seriously affected unloading on the beaches, and consequently disrupted the proportion of combat and service troops, as well as supplies, off schedule, we were only able to land one complete combat team with equipment and transportation.

The division commander organized a small advance command group and personally took command of the advance guard of the combat team. The assistant division commander stayed in the beach area to supervise the unloading of the balance of the division and to bring it along as soon as possible. The road net was very restricted, and the pursuit force was forced to move in a considerably extended formation along one main road. The difficulty of control was evident. Army headquarters, corps headquarters, division headquarters, less the advance party, and the advance party were widely separated. In the initial three days of pursuit, advance was extremely rapid and distances became even greater.

Although the signal teams worked desperately day and night, it was with the greatest difficulty that even single wire lines could be laid to follow the advance. Communication was therefore restricted by necessity to radio. Fortunately, several of the liaison teams had been landed prior to the debarkation of the advance guard, and were largely responsible for the relative ease with which the division commander maintained control of the main column as well as maintained contact with higher and subordinate headquarters.

Another instance of the value of the liaison section occurred during the first crossing of the Volturno River. Prior to the crossing and to the construction of bridges, there was no possibility of laying wire forward, so that radio had to be used exclusively for a considerable time after the main attack. In this operation, two combat teams of the division made a crossing at well-separated points. The division commander conducted the operation from a small observation post overlooking the river bank, and again through the means of his liaison set was able at all times to obtain accurate up-to-date information as to the progress of all troops and was in constant communication with the reserve regiment, enabling him to commit it at the precise time and place that he wished.

In conclusion, it would be foolish to assume or to claim that the liaison system herein described is the only system that will work. The normal command net in the division is placed in approximately the same locations as the liaison net, and when wire communication fails, the command net is thoroughly able to handle the traffic and to allow the division commander complete control. However, the main point is that in the liaison net the commanding general has far more than mere means of communication. He has, in addition, a highly trained agent who is thoroughly familiar with the division commander's own plan, with the regimental or battalion commander's plan, and who can give a message from the division commander to the unit commander quickly and accurately. In a slow-moving or static situation or in a situation where large masses of troops are operating in close proximity, the value of the liaison net is reduced. However, by actual experience in rapidly moving situations and in situations where a higher commander needs close, intimate control of several subordinate units, each one operating on an individual plan or on a task force basis at considerable distances from each other, this system has worked and will work.

Bomber Operations in the Pacific

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TOO often we are under a misapprehension as to what our Air Forces have to operate with in the Pacific Ocean Areas. When news releases of our global operations reach the average reader of our newspapers, he is too often prone to compare one theater with another. He is unaware of operating conditions; time, space, facilities, weather conditions, availability of bases, and the like. In Europe, operating facilities are confined to limited areas, every available bit of space is utilized, communications are excellent, and availability for operations is high. One loses sight of those conditions that exist in the Pacific Ocean Area if a comparison is made with the European Theater of Operations.

When this war started on the morning of 7 December 1941, our defensive forces were pitifully small in the Pacific. There were hardly sufficient aircraft to defend one of our bases for one day; and tragic as it may seem, these pitifully few aircraft were scattered over the vast reaches of the Pacific. At no point were we able to muster sufficient air power to halt successfully the encroachments of the Japanese in their relentless drive to conquer all of the land masses in the Pacific. Our front in those first critical months extended from Alaska to Hawaii to Australia and on to the Philippines, a front of thousands of miles. Of course we fell back. The pressure of a fully prepared and numerically superior force was too great for the few scattered defenders. When all the pages of the history of this war are written and censorship is no longer invoked, then and only then will it be possible to tell the complete story of the gallant task so ably accomplished. Perhaps a tribute should be paid to those who fought so gallantly in those early days comparable to Winston Churchill's immortal tribute to those few who gave so much for so many.

In those dark days it was not possible to muster a large force at any one place to stop the Jap. When one considers that our battle front was in the neighborhood of ten thousand miles long and the number of aircraft was so small, it can readily be seen that the majority of operations would be confined to search and patrol missions. Even these missions were not too successful in certain areas. In Alaska, the weather cauldron of North America, operations were continuously hampered by adverse weather conditions; at times the weather in this area was heartbreaking. In the Southwest Pacific Area adverse weather conditions also played a major role in hampering our meager forces. But weather was a minor consideration compared with the long and vulnerable supply lines which fed that trickle of supplies necessary for our operations. When these supply lines were cut, there was only one thing to do—fall back. From the Philippines to Borneo, to Java, to Australia was the path of our battle-scarred little force in the Southwest Pacific Area. By April of 1942 our line ran roughly: Australia, Southeast New Guinea, New Hebrides, Fiji Islands, Phoenix Group, Midway, Alaska. The veterans of those early days can tell only too well of the heartbreak that dogged our steps at every turn.

The Nip in the meantime was becoming overconfident. He overreached himself once too often when he suddenly became involved with our Navy in the Coral Sea battle. There is no question about the rude surprise the Jap received in that battle. It took him completely off his feet and sent him scurrying for cover. This battle slowed down the Nip to a standstill; and then came the Midway battle which was the true turning point of this war in the Pacific. These two battles gave us that precious time so sorely needed to build up our strength to a more even match with the so-called sons of heaven. From the time of the Midway battle on, our bomber operations changed. From the pecking, harassing nature of operations, there was gradually built up a systematic, cold-blooded war of attrition. But it was not a war in which both sides suffered equally heavy losses. Lieutenant General Kenney, present

Commander of the Far Eastern Air Forces, made this statement: "When we knock down ten Japs to every aircraft we lose, I'll consider it breaking even." It was this fighting spirit that made operations in the Pacific what they are today. Ten to one were the minimum desired results; everything over that was profit. This spirit spread all over the Pacific, not only in the Army air units but in the Navy as well.

With the turn in events as the result of the Coral Sea and Midway battles, operations in the Pacific settled down to plan. No more were bombers' operations spur-of-the-moment strikes at points where the Jap presented his greatest threat. The element of time favored our forces and we took full advantage of it. Long-range plans were being put into effect. Air, ground, and Navy each began playing its part; each fitting into its proper place in an exceedingly well-organized scheme of maneuver.

Perhaps the biggest thorn in our side was Rabaul in New Britain. Before it was possible to make any major moves in the Pacific it was necessary that this major Japanese base be contained for a period sufficiently long for our forces to make their first thrust forward. This task was assigned to the Fifth Air Force. In spite of the threat of the Japanese, who were at one time within twenty-five miles of Port Moresby, our advanced base, Rabaul was kept sufficiently occupied to make possible the Marine landing on Guadalcanal. When Guadalcanal was taken, Rabaul was threatened from two directions, and the Fifth Air Force was relieved to concentrate more thoroughly on the Japanese who were threatening from the north. But Rabaul was not left to recuperate; continued strikes were dispatched against this bastion to keep it from becoming too strong for our still meager air forces to cope with.

The most outstanding operation involving strictly air, predominantly bombers, was the Bismarck Sea battle which took place in March of 1943. This operation proved beyond a doubt the ability of land-based air to cope with a seaborne invasion force. There is also ample proof of the ability of land-based air units to destroy sea-going forces in the repeated destruction of Jap naval forces moving down "the Slot" in the Solomons. Repeatedly this "Tokyo Express" was mauled to such an extent that it was forced to turn back to its base rather than suffer total destruction.

The destruction of the Bismarck Sea convoy set the stage for a rapid advancement of Allied units until Lae and Salamaua were captured, from which time on practically all operation in the Pacific took to water. The war became amphibious, or as Mr. Churchill said, "triphibious." Air, sea, and land power were combined and it is this type of operation with which every good staff officer should become thoroughly familiar.

From the viewpoint of the airman, these amphibious operations provide him with forward bases from which to employ more effectively the striking power of the weapon with which he is equipped. Guadalcanal, the upper Solomons, the Marshalls, the Gilberts, New Guinea, and New Britain have developed the pattern for such operations in the Pacific. No two operations are exactly alike and yet certain techniques are common to all. The basic principles of war concerning mass, mobility, and surprise are necessary to the successful conclusion of waterborne operations.

Before any amphibious operation can be successfully concluded, a great deal of planning must take place. Planning is the secret of success; it must be long-range, detailed, thorough, deliberate, and flexible. One plan is not sufficient; alternate plans must be prepared in order that they can be put into effect with a minimum of delay, in case the original plan should fail to meet with the desired success or should become impracticable at the last moment. Planning is not a simple, quick task; it requires weeks and months of study—long, hard work that does not end until the operation has come to a successful conclusion.

Among the major considerations affecting air in amphibious operations are:

1. Objective and terrain.
2. Information of the enemy.

3. Preliminary softening-up operations.
4. Logistic support.
5. Naval air support.
6. Meteorological conditions.

Objective and Terrain.—One of the first considerations in amphibious operations is the study of the terrain at the objective. The airman's prime interest in this is suitability of the terrain for the construction of air strips from which he can operate his bombers. And, too, he must operate fighters in the area to prevent enemy air from interfering with the operation.

In this terrain study, close coordination and cooperation must be effected with the ground forces. Neither air nor ground can operate without the other, and the cooperation that results from these forces planning together increases the prospects of the success of any operation.

Information of the Enemy.—No sound technical plan can be arrived at until all possible information of the enemy has been studied and evaluated.

Every capability of the enemy must be carefully studied; his operational bases must be watched; in other words, the airman must know more about the enemy than the enemy knows himself.

Preliminary Softening-Up Operations.—It is in this stage of operations that the bombers expend their greatest effort. One of the first requisites of any successful operation is air superiority. From the information gathered about the enemy, the airman makes his plans. Every enemy air base within range must receive attention, every possible enemy aircraft must be destroyed. The enemy air must not be allowed a moment's respite; he must be hit hard, then kicked in the face when he is down so that chances of recovery are nullified. Not until the enemy air is reduced to impotency is it advisable to seek other targets. After air superiority is gained, the enemy sea and land forces must receive sufficient attention to neutralize them for a sufficiently long period of time to insure the friendly sea and land forces freedom of action in their operations.

These air operations must take place well prior to any attempted landing by surface forces. It may be necessary to operate for months, continuously harassing and pounding, never hitting too often in the same place unless the situation so warrants it, until the enemy becomes so groggy he doesn't know where the strike will hit next.

During the last few days before the amphibious operation takes place, an all-out effort must be expended at the objective and sufficient diversionary activity must also take place to keep the enemy guessing.

Logistic Support.—Here again it is necessary for air to coordinate with sea and land forces. The supply plan must be adequate to support the operation. Sufficient shipping space must be allocated to air to move in the necessary supplies, personnel, and impedimenta to the area where the amphibious operation is to take place in order that air operations can commence as quickly as possible from air fields in the newly-won area. There must be the least possible delay between the initial landings and the beginning of air operations from local airfields. Equipment must be landed as early as possible and immediately put to work preparing landing strips. Supplies in sufficient quantity must be moved in during the initial stages to bring about speedily the functioning of the first air units that move in.

Naval Air Support.—Invariably, naval air will support amphibious operations where distances covered are great. The land-based air must coordinate its efforts with that of seaborne air to bring about the maximum effort at the desired location. The two must work together as a team.

Meteorological Conditions.—Our enemy in the Pacific has long ago taught us the necessity for careful study of meteorological conditions. A careful study must be made of weather trends, lunar cycles, prevailing winds, light conditions, and length of night.

The Gilberts and Marshalls Operations

To bring out more forcibly the operating conditions in the Pacific Ocean Areas let us consider the operations of land-based bombers

in the Gilberts and Marshalls operations. The operation of the land-based air was predominantly a Seventh Air Force show.

The planning and operational procedure for land-based units in the Marshalls operation resulted from the experience gained in the Gilberts operation which took place during the period 13 November to 6 December 1943. The Gilberts operation, like its successor, the Marshalls operation, was executed by the combined forces of the Navy, Army, and Marine Corps, and in a sense acted as a guide for the future operations in the Marshalls. The shortcomings discovered were corrected and lessons learned were applied to the best advantage for all concerned in these operations. We must go back to the Gilberts where the foundation for the plans and operations in island-hopping was tested out.

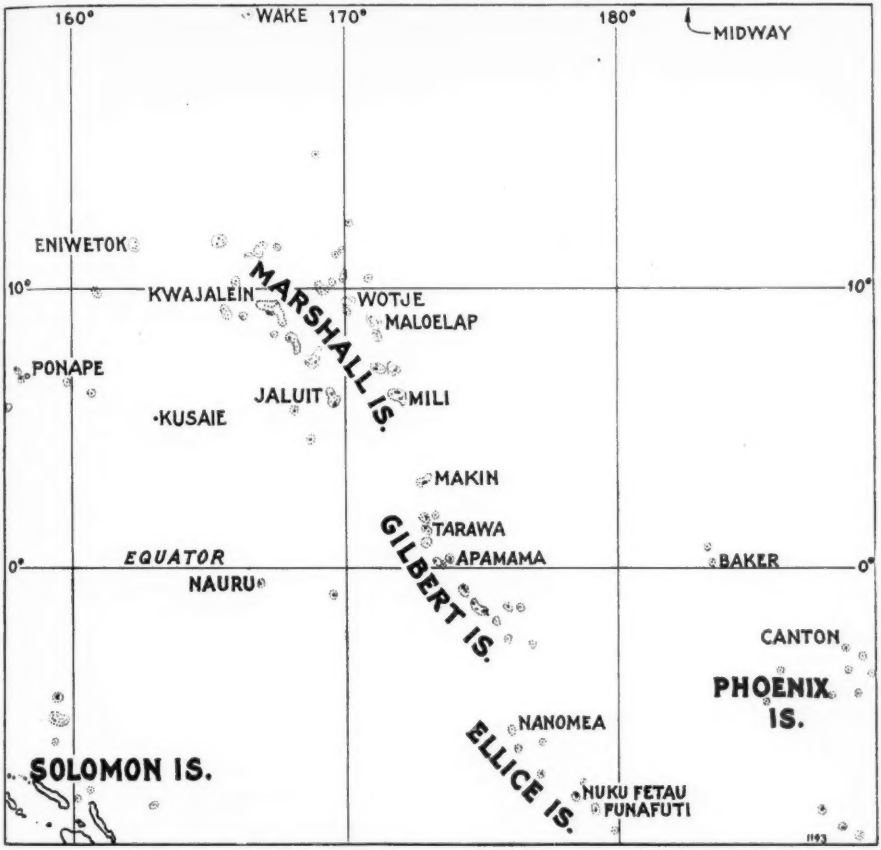
The objectives in the Gilberts operation were Tarawa, Makin, and Apamama (see map). They were attacked and occupied in order to deny these atolls to the Japanese and provide bases for our own forces. The major effort was made against Tarawa where it was known that the Japanese had established an air base. The mission of the Seventh Air Force during this period was primarily to deny airfields at Makin, Tarawa, Mili, Nauru, Jaluit, and Maloelap for use by enemy aircraft.

This mission was a big order for what small forces we had engaged in this area, a mere seven squadrons. Our bases from which operations were conducted were on the islands of Canton, Funafuti, Nukufetau, and Nanomea. Baker Island was utilized as a staging point for aircraft based at Canton. Nanomea was also utilized for staging aircraft. The fields on the average were about 6,000 feet long, most of them carved out of coconut groves.

A word about the enemy bases against which operations were carried out in the Gilberts operation. Makin had facilities for operation of seaplanes, and the Japs had installed antiaircraft positions to defend this forward seaplane base. At Apamama it was known that no serious opposition could be expected. Tarawa was a strong air base, the strongest in the Gilberts. The airfield had one runway, two taxi strips, and aircraft revetments, and photographs disclosed an intricate ground defense system, dispersed ammunition dumps, and an elaborate radio communications system including two early-warning radars. Military supplies in large quantities were dispersed on the other islands in this same atoll. Jaluit was a Jap seaplane base of quite some importance. Mili and Maloelap in the Marshalls were also of importance and will be discussed later when we cover the Marshalls operation. They were important bases to be reckoned with in the Gilberts operation. Nauru is an isolated island whose main importance is its phosphate deposit. In addition to the necessary installations for the refinement of phosphate, the Japs operated two air strips and were in the process of building a third. Military supplies were dispersed throughout the main portion of the island. The island was defended by a formidable antiaircraft and ground defense system.

This, in general, was the picture in the Gilberts operation; but it was not the only thing we had to contend with. The remoteness of enemy targets from our widely dispersed operating bases required flights over some of the greatest distances attempted in this war. The distance flown from home bases to objective and return varied from 926 nautical miles to 2,408 nautical miles, or converting to statute miles, from 1,065 to 2,770 miles. Weather information ranged from meager to inaccurate to none at all. Homing facilities and navigational aids were either inadequate or at times nonexistent. All flights traversed great water distances with no intermediate landmarks. The objectives and home bases consisted of small land masses requiring most accurate navigation. Bomb loads had to be reduced so that additional gas could be carried to accomplish these long flights.

Enemy resistance was not too great. Antiaircraft fire of all calibers was encountered for the most part meager in quantity and generally inaccurate. Retaliation consisted of three night attacks on our bases at Nanomea



THE MARSHALL AND GILBERT ISLANDS, SHOWING PRINCIPAL ISLANDS AND ATOLLS MENTIONED IN THE TEXT.

and Funafuti. Damage from these raids was not sufficient to cause reduction of effort.

The Gilberts were taken, and immediately plans were drawn up to move to the Marshalls. The following factors had to be considered in this planning:

1. Shorter distances to targets; greater bomb loads.
2. Better weather information.
3. Reinforcements.
4. Increased enemy resistance.
5. Longer lines of communication.

Let us consider the forces at our disposal during the Marshalls operation. For this operation we had the original seven squadrons of heavies, augmented by one group of mediums and one squadron of dive bombers. A fighter command of mixed Army, Navy, and Marine Corps fighters was available and utilized. In addition, the Navy furnished a search and patrol group whose primary task was to act as the main reconnaissance agency for the land-based air.

Three new bases were available to us as the result of the Gilberts operation: Tarawa,

Apamama, and Makin. These new bases improved our situation, permitting forward displacement of our forces from Canton, Funafuti, and Nukufetau.

The enemy bases with which we were concerned mainly in the Marshalls operation were:

1. Kwajalein Atoll.—On Roi the Japanese operated a major air base capable of accommodating all types of land-based aircraft. On Priority Island the Japs had built an air strip after the initial phases of this operation, and also on this atoll the Japs had a major seaplane base. Besides these objectives, the atoll was known to be a shipping center and naval base. Supplies, munitions, and oil storage were dispersed throughout the islands on the eastern side of the atoll. Ground-and antiaircraft defenses were strategically located throughout the atoll.

2. Wotje.—Here the Japs had developed a strong advanced base for seaplanes as well as land-based aircraft, including extensive servicing aprons, hangars, shops, and bunkers. Underground storage was provided. Barracks, warehouses, and concrete structures were scattered throughout the island and strong fortifications against ground and aerial attack were constructed.

3. Maloelap Atoll.—On the island of Taroa in the Maloelap Atoll the Japs had a particularly well-developed air base. During this operation it was believed that fighter headquarters was stationed here, since strong fighter interception was met here by our land-based aircraft on their attacks prior to the actual assault period. Taroa appeared to be the most important air base in the forward Marshalls area with complete facilities and a particularly strong defensive system.

4. Mili.—This atoll lies at the southeastern corner of the Marshalls. It contained the normal air facilities and defensive system to protect the island from attack.

5. Jaluit Atoll.—In Jaluit Atoll there was an important seaplane base at Emidj and a shipping center at Jabor. The Japs maintained a forward supply point for the Marshalls at this atoll. Warehouses, oil, and gas storage were located on several of the islands in the atoll. The Japs had their usual defense system organized against ground and air attacks.

Before we go further, let us have a look at the plan of operations for land-based air. In the actual assault on Kwajalein Atoll the plan was to have a minimum of one squadron of land-based bombers arrive at a point ten miles south of the center of Kwajalein Island by H minus 60 and report to the Support Aircraft Commander on a previously assigned frequency. They were to remain in that vicinity until ordered to attack by Support Aircraft Commander at about H minus 30. Their primary targets were strongpoints at two specifically designated points and the blockhouses between those two points along beaches red. Special care was to be taken that no bombs fell in the water, on the beaches, or on the airfield. They were to return to their base immediately upon making the attack.

This does not speak much for the effort expended in the actual assault on Kwajalein Atoll by the land-based air. The main task of the land-based air was in a sense a strategic task; it had the task of neutralizing the Jap bases as much as possible prior to D-minus-2 day when the main assault forces arrived. The mission of land-based air up to and including D-minus-3 day was to deny Mili and Jaluit as air bases to the enemy and also to maintain the neutralization of these bases thereafter; in addition, the destruction of enemy aircraft and air facilities at Maloelap, Wotje, and Kwajalein Atolls. On D-minus-2 day and thereafter the mission of land-based air was to assist other forces in denying Wotje and Maloelap as air bases to the enemy. All during the period of the Marshalls operation, destruction of enemy shipping was a first-priority target.

In the air plan for this operation, in addition to the plan for support in the assault phase, the tasks allotted to land-based air were:

1. Reconnoiter and photograph Kwajalein Atoll, Mili, and Jaluit at least every ten

days throughout the operation. These photo reconnaissance missions were accomplished as directed.

2. The second task was to search certain specific ocean areas; the areas adjacent to Kwajalein Atoll and its supporting bases, the approach areas favorable to the enemy, and a search of designated approach of our forces during the approach to the objective.

3. The third in the list of tasks assigned was the destruction of enemy shipping and surface forces located by the sea searches.

4. Strikes against Kusaie, Nauru, and Wotje by all types of aircraft until D minus 10 for the purposes enumerated in Annex No. 5 to the Field Order No. 1.

5. Strikes against Jaluit, Mili, and Eniwetok when reconnaissance disclosed a profitable target.

6. Continued and repeated strikes against Kusaie, Nauru, and Wotje with aircraft other than heavy bombers, and Jaluit, Mili, and Eniwetok with heavies after D minus 10.

7. Frequent strikes by heavy bombers against Kwajalein Atoll from D minus 10 to a time announced later, both day and night, designed to sink or destroy shipping, destroy supplies and facilities, and destroy and demoralize personnel.

This in general was the plan for the utilization of land-based air prior to the assault on Kwajalein Atoll.

The basic assumptions in connection with the neutralization of Jap bases for which this plan was evolved were that land-based aircraft from bases at Ponape, Eniwetok, Wake, Kwajalein Atoll, Mili, Kusaie, and Nauru and enemy seaplanes from bases at Jaluit and possibly other atolls might attack our forces, but that our land-based aircraft would be able to prevent such operations from Mili and Jaluit and reduce to minor proportions any from Nauru and Kusaie. The plan of neutralization consisted broadly in bombing of the objectives mentioned, carried out through the several preceding weeks by land-based aircraft with increasing intensity up to D-day and continuing thereafter as necessary, augmented on D-minus-2 day by carrierborne aircraft and by the guns of surface vessels, increased on D-minus-1 day by bombardments from battleships and cruisers, and continued by all of them as found necessary thereafter.

Thus far we have discussed the basis for our planning factors, the plan of operation, and touched a little upon what the Japs had. Let us briefly look into what happened.

The choice of objectives, which planned on strategic considerations as far as possible, was necessarily modified by the capacity of base facilities and locally existing weather conditions. Some strikes which started out for certain objectives were forced by weather conditions to drop their bombs elsewhere. Mili, Maloelap, and Wotje received the heaviest and most continued attention, being important air bases and a menace to our operations as long as they had any planes on them or could stage any. Jaluit with its seaplane facilities required and received somewhat less attention. Nauru was of minor importance since it was used only as a seaplane base, and was situated geographically where it could do little harm. Kwajalein Atoll was attacked by our bombers up to and through the portion of the assault period ending 1 February. Our landing forces were engaged in assault from 1 February on, and several days later had gained undisputed possession of the atoll. Kusaie and Ponape, staging bases, were given sufficient attention to neutralize them after the Marshalls bases themselves had been thoroughly subdued. Eniwetok was too far for effective bombing and was left to the carriers, while Wake was taken care of by aircraft from Midway. Mili was attacked nearly every day during January and February by dive bombers and fighters. It is believed that planes were not able to land and take off from there after the middle of January, but air attacks were continued to insure neutralization. Wotje and Maloelap, both within range of heavy and medium bombers but beyond fighter range, received serious consideration and rough treatment throughout January. Interceptions by the Japs were strong from these bases up to D-minus-3 day, and when carrier-based

aircraft attacked on D-minus-2 day the airfields were still operational.

In summing up this operation, one thing stands out. It is highly significant that although the land-based air had fifty-six days in which to operate, only one field held by the enemy was neutralized completely. This field was at Mili, which is only 195 miles from Makin—sufficiently close that any attempt by the Japanese to repair any facilities could, within two hours of the discovery of these repair attempts, be completely knocked out again. Range and numbers of aircraft available for strike missions, as well as weather and other incidentals to operations, kept our scale of effort down to the point where it lacked that final punch necessary to keep all enemy bases nonoperational at all times. To knock out an airdrome completely takes strong forces repeatedly striking that airdrome day and night until the will of the defender to repair damage is broken. The spirit of the man must be broken and his tools destroyed.

The Value of Time

Lieutenant General A. F. Harding, Chief of the General Staff, Central Mediterranean Force, in *Aim*, army magazine of the British Middle East Command, No. 17.

OF all the many factors that call for thought and study in the solution of a fighting soldier's problems, none have impressed themselves on my mind more forcibly during several years' active service experience, both as a commander and staff officer, than the value of time.

There is never enough time in war. You can never begin your preparations too soon, you can never look too far ahead. I well remember how, in the first successful campaign in the Western Desert, General O'Connor made his plans for the advance from Bardia to Tobruk, and for the opening phases of the attack on Tobruk before Bardia was captured. I remember, too, being told by General Montgomery that he was preparing his plans for the attack on the Mareth line some time before we began our advance from Buerat to Tripoli. I feel sure that both these commanders would agree that the success gained in the subsequent battles was largely due to the time saved thereby.

What applies to armies applies with equal force to divisions, brigades, and battalions; to companies and platoons; and to the individual soldier. Make your plans well ahead, always be ready. How often have you heard it said, in excuse of failure, "It was too late"; "We hadn't time"; "The enemy was too quick." To succeed in war you must always be ahead of time, never behind it.

Surprise is often stated to be the most potent factor in war, and surprise can best be obtained by speed—speed of thought and action, speed of decision, speed in reconnaissance, in the issue of orders and the mounting of an attack, speed in anticipating the reaction of the enemy and in taking steps to meet it. And speed can only be obtained by a proper appreciation of the value of time. In business, time is said to be money—in war it spells the difference between failure and success.

My advice, therefore, to all those who are training for war is to analyze carefully their procedure, their technique, and their methods, to determine how, by thought and training, time can be saved.

There are many pitfalls and mistakes which it is hard to avoid in war, but by self-discipline and hard thought and training we can all make sure that we are never guilty of wasting time.

The Strategical Situation in Europe at the New Year, 1945

COLONEL CONRAD H. LANZA

THE year 1944 saw a great change in the strategical situation throughout Europe. During the first six months, Russian operations dominated the progress of events. Thereafter the Russians shared with the British and American Allies in the freeing from German occupation of vast territories.

By hard fighting, Russia drove the Germans out of her own country. This was nearly completed during July. Thereafter, operations have never been over the entire front. They have been limited to sectors where Russia had special interests. Her victories induced three small Axis allies—Rumania, Bulgaria, and Finland—to desert Germany and join their former enemy. All three placed important military forces at Russia's disposition, and at the same time installed "sympathetic" governments. There has been no trouble between Russia and these little states. They are cooperating.

With Russian help, the German forces in Rumania, Bulgaria, and Finland have been driven out of those countries. In Finland a new front has been stabilized along the Finland-Norway boundary, and at the end of 1944 was a tranquil sector.

Rumania joined with Russia in an attack on Hungary. This has been successful to the extent of the occupation of about seventy-five percent of Hungarian soil by Russian forces. For that part of Hungary, another "sympathetic" government has been organized. The campaign for the capture of the remainder of Hungary is under way. It is meeting strong German resistance. Some Hungarian troops joined the Russians. Latest available returns indicate that as of 1 December, twenty out of the twenty-four Hungarian divisions known of were fighting with Germany.

The Bulgar Army joined with a small force of Russians to attack the Germans in the Balkans. This has not been successful. The Germans withdrew from Greece without interference, together with some of the Aegean Island garrisons. They still hold Rhodes and Crete.

The Germans appear to be voluntarily withdrawing from southern Yugoslavia. Their most southern troops in mid-December were about along the old north boundary of Montenegro. Their line of communications extends through Sarajevo to Zagreb. Two corridor walls protect this line—one faces east along the mountains, nearly on the line Tuzla — Zvornik — Novi-Pazar; the other faces west and is along the Dinaric Alps close to the Adriatic Sea. The east corridor wall has been under attack by Russians, Bulgars, and Yugoslav Partisans since September, without having been broken. The west corridor wall has been attacked lightly by British troops and Yugoslav Partisans based on Adriatic ports. The wall has not been dented.

During the past autumn, Russian campaigns recovered all of the three small Baltic states of Estonia, Latvia, and Lithuania, less the western part of Latvia where Germany holds a large beachhead extending behind a line from just west of Riga to south of Liepaja. In Poland there has been no major fighting since July, when the Russians reached a line along the Vistula River.

At the end of 1944, the campaign in Hungary was the only major one in which Russia was engaged. This is a 250-mile front out of just about 1,000 miles from the Baltic Sea to the Drava River.

On the western side of Europe, military operations started early in June with the Allied invasion of France. In two months the opposing German armies had been defeated. The Germans withdrew from France so rapidly, and apparently with such poor equipment, that the western boundary of Germany was reached on 3 September, almost without opposition. This, coupled with the great advances being made by the Russian armies, led to a general belief that the war with Germany was nearly over, might be finished by October, and quite certainly by Christmas.

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That this opinion was accepted in high circles is indicated by the announcement of Prime Minister Churchill. On 16 September, referring to the second Quebec Conference then just ended, he announced that the "decisions of this conference will be spelled out in action on the Pacific, just as those of the last Quebec Conference are now being realized in Europe." Events in the Pacific since that statement have been speeded by the Allies with noticeably increased forces and matériel, now to be spared in view of the situation in Europe.

Starting in September and continuing through October, the Allies attacked the western German frontier. Progress was steady but very slow. The resistance met with was greater than had been expected. It began to be doubtful whether Germany could be forced to unconditional surrender before the end of the year.

Political considerations affected the strategical situation. A delay in ending the war in Europe threatened to retard correspondingly the intended war in the Pacific. Contrary to the Russian practice, the Allies in freeing western European countries had not installed "sympathetic" governments, but had made a sincere effort to grant freedom to local populations with the right to select any government they chose which did not have antidemocratic ideas. Unfortunately, this led to complications.

The most important that came up was Poland. Any action taken in regard to that state's future was bound to make a precedent which might cause serious results. Great Britain had gone to war in 1939 for the express purpose of guaranteeing Poland's boundaries. Great Britain had officially stated that she would not agree to any cession of Danzig or of Polish territory, whether made voluntarily or not, if Poland objected. In 1941, the United States, previously encouraging this principle, adopted it in the Atlantic Charter by subscribing to a clause that there should be no territorial changes without the free consent of the peoples involved.

Russia desires to annex the eastern third of Poland—a larger territory than Germany proposed to take in 1939. It now appears that Marshal Stalin made Russia's desires known at the Teheran Conference held at the beginning of December 1943. There is no record of what President Roosevelt and Mr. Churchill replied to this. It seems that at least they did not positively disapprove. At that date, the boundary demanded by Russia was far inside the German lines. The question was not then pressing. It became so in July, after Russia had reached and crossed the claimed line.

The Government of Poland recognized by the United States and Great Britain is the Government-in-Exile in London. Historically, it is the successor of the Polish Government which escaped from Poland in 1939. It has declined to accept voluntarily the loss of a large part of its territory to Russia, and insists on an application of the principles for which the Allies claimed they were fighting.

Russia has solved this problem by organizing a "sympathetic" Polish Government at Lublin. A "vote" taken under Russian supervision elected representatives who are friendly to Russia and who are willing to surrender the contested territory. In return, Russia will aid Poland to capture from Germany such German territory as she considers would be fair compensation.

The British are backing Russia. On 28 September, Mr. Churchill in the House of Commons stated that the Russians had the right for support for their views. Mr. Churchill then went to Moscow. On 27 October, upon his return, he regretted to the House of Commons that he had been unable to arrange a satisfactory settlement.

The matter affected the military situation. The Allied armies were making such slow progress against the western German front that it appeared that energetic measures would have to be taken if the war was to be ended during 1944 as had been contemplated. One way to do this would be for Russia to renew her attack through Poland, driving straight towards Berlin. From Mr. Churchill's speech on 15 December, it appears that Russia would not undertake such an offen-

sive unless her claims to Polish territory were publicly recognized.

Two steps to solve this difficulty were taken —one political, the other military. The head of the Polish Government-in-Exile was sent to Russia with a view of arriving at an agreement on the troublesome boundary. The United States officially announced that if such an agreement was arrived at, she would recognize it. This effort failed, as the Polish Government-in-Exile has stuck to the principles enunciated in the Atlantic Charter.

The military effort was a new and stronger attack against the western German defenses. At the end of October, many high military advisers were of the opinion that Germany had no possibility of resisting a strong Allied attack. They believed that the enemy's ability to move could be stopped by the destruction of his transportation by air forces. Landings could be made in rear of his defenses. The amazing equipment of the Allied armies was so superior to anything Germany had that frontal attacks could penetrate his front. If they did not, they would cause the enemy such large casualties that within an estimated two weeks of continuous battle his lines would be so denuded of men that they would crumble away. They were convinced that Germany had no GHQ reserve and never had had, all reports about a general reserve being ascribed to enemy propaganda.

Not everyone agreed with that theory, but it seemed worth trying. If Germany could be defeated within two weeks the war would be over, and without its being necessary to ask Russia to launch that Poland offensive.

The military attempt was launched in mid-November. It led to the capture of Metz and Strasbourg, with substantial territorial gains in Alsace. Minor territorial gains were made in the Aachen area. The Allies fought forward for a full month, or twice the time estimated as needed to secure a penetration or the crumbling of the enemy's front. Neither objective was attained.

Mr. Churchill, in a speech on 15 December, again publicly asked Poland to accept the Russian demands and strongly intimated that Russia would thereupon go ahead with the desired offensive. Whether the Allied Supreme Command at Paris inspired this request is yet unknown. It seems unlikely that they had not been consulted.

On 16 December, Germany surprised the Allies by a counteroffensive, which broke through in the Ardennes for a maximum gain of about fifty miles. The area seized contains no important resources or cities. But the Germans demonstrated that they were not crumbling away, and that they had had a reserve and were materially stronger than had been thought possible.

A minor campaign was fought during 1944 in Italy. This resulted in an Allied advance of about 250 miles to the neck of the Italian peninsula.

As 1944 closed, Mussolini has announced that four Italian Fascist divisions are entering the line in Italy. Russia has announced that twenty new German divisions have arrived on her front as against a loss of four Hungarian divisions.

Outside of the Polish question, there are sound strategical reasons against Russia's undertaking the desired offensive through Poland. According to Russian reports, Germany has thirty divisions in her Latvia beachhead, which has a 120-mile front. This is at least ten divisions more than normally necessary for a defensive front. Following two previous unsuccessful efforts, Russia in December attacked this bridgehead for a third time with the equivalent of sixty divisions. This failed. So did an earlier attempt to drive strong German forces out of East Prussia, which has a 200-mile front. The strength of these Germans is unreported—it is estimated as thirty to forty divisions. A Russian offensive westward through Poland, leaving sixty to seventy German divisions on their right rear, would be hazardous and might lead to disasters comparable to those of 1914, 1915, and 1941 in the same areas.

What is the German strength? How was Germany able to reinforce all fronts and at the same time undertake a major offensive in Belgium?

On 20 July last, an attempt was made

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against the life of Hitler. The mission of the conspirators was to secure a change in the German High Command, which at that date had taken a terrific beating on both the eastern and the western fronts. The conspirators missed Hitler, but they did secure an almost instantaneous change of the High Command.

According to Swedish reports, Germany had had in occupied territories of Russia, France, Belgium, Finland, and the Balkans not less than 1,250,000 troops who had had basic training and who were operating air fields, antiaircraft and coast artillery, military police, depots, railroads, and similar military utilities. All have been transferred to combat duties, and alone have largely replaced German losses.

By reclassification, an estimated 400,000 men were obtained within Germany. A large number of administrative posts were discontinued through restriction of occupied areas and consequent reduction of overhead. This number has not been ascertained—it is estimated as 200,000. These 600,000 men need basic training and would not be quickly available.

There has been a sizable reduction in the Air Corps and in the Navy, in favor of the Army.

According to British reports, about 500,000 Russians, who are anti-Communist, are serving with the German armies. The Polish and Czech contingents appear to number as many. Small contingents have come from other occupied countries and a large one, stated by Mussolini to number 800,000 men including labor troops, is from Italy.

Adding all these contingents together indicates that Germany probably has been able to fill vacancies in her ranks, and may still have men in her depots. It should not be forgotten that the yearly class of young men from 85,000,000 Germans approximates a million.

Despite the very heavy bombing of Germany, neither her railroads nor her industries have failed to function. On the western front, the German troops have 1945 models of tanks, bazookas, and other articles in quantities. Artillery has noticeably increased. British reports state that Germany has enough gasoline and oil in storage to last through 1945, exclusive of what is produced by synthetic oil plants which are still functioning. German railroads are numerous, with many cross connecting lines. When a line is interrupted, detours are quickly arranged.

As the New Year opens, Germany has not been beaten. There is too little information available to report on Germany's internal situation. From a strategical standpoint, it is better to plan on the assumption that fighting will be required.

The strategical situation, as had been foreseen, is being clouded by the events in occupied countries. In some, famine is stalking through the land. In all, well organized and armed partisan forces are present, whose future activities are uncertain.

The year 1944, with the rewinning of German-occupied Russia, the freeing of France, Belgium, and the major part of the Balkans, and the liberation of Finland and most of the Baltic states, was a year of wonderful achievements, most creditable to Allied leadership.

The year 1945 starts with new problems, which are more complicated and affect both political and military conditions. Strategy requires that these forces be controlled into one united movement and but one major mission at a time.

There are two ways of saving time; one is by speed in appreciating and planning, which only comes from practice, and the other is by speed and resource in the attack.

—Major General H. L. Birks

Conversion of Units, Army Service Forces

BRIGADIER GENERAL ARTHUR G. TRUDEAU, *General Staff Corps*

ONE task that we can be sure V-E (Victory in Europe) Day is going to impose on us is the conversion of units from one type to another. Such conversions may take place in the United States, or in the European or the North African Theaters. Our particular problem is concerned, of course, with such conversions as may occur in the United States. Demobilization policies, plus demands for the waging of war in the Pacific, are bound to make this problem one of some magnitude. Some of the units involved will probably be Army Ground Forces units declared surplus after V-E Day.

This article will discuss some of the major problems encountered in such conversions and will support the points raised, insofar as practicable, by personal experiences of the author encountered during 1944 in the conversion of certain Army Ground Forces units into a wide variety of Army Service Forces type units in the North African Theater of Operations.

Based on directives from the War Department, it is important to develop plans for conversion promptly so that all concerned can be thinking about the problem and decide how they are going to solve that part of it that concerns their echelon. Discussion of the problem of conversion will be treated in two phases: the first, to cover those problems to be solved by Headquarters, Army Service Forces, including the various Technical Services; the second phase to be devoted to those problems that must be solved by training center commanders who are charged specifically with the conversion of units from one type to another.

PROBLEMS TO BE SOLVED BY HEADQUARTERS, ARMY SERVICE FORCES

No one is yet in a position to decide which units will be available for conversion. The basic policies for the release of military personnel from the Army have already been announced. The discharge of individual enlisted men based on a credit system for length of service, number of dependents, and other points, will cause a considerable disruption of existing units. Consequently, a unit returning from overseas may be merely a vehicle for controlling a large number of men who are being returned to the United States for either discharge or retraining, and the type unit involved, therefore, will not indicate necessarily the type or number of skills that may actually exist in this body of men. As a result of this situation, our problem will be more complex than if we were assured that a certain type organization contained the proper number and proportion of prescribed skills.

Furthermore, there can be no assurance that the type of unit being returned will be the type that lends itself most easily to conversion into a unit of another type. For instance, it would be comparatively simple to train a new engineer construction battalion, if an engineer general service regiment were to be returned from overseas. It is not unreasonable to expect, however, that the requirement for certain ASF type units after the fall of Europe will be greater in that area than the requirement for corps or army service troops or even for infantry divisions. Only a limited number of infantry divisions will be needed for guard and police purposes, but the theater commander may desire to retain as large a proportion of service type units as is possible for rehabilitation, sanitation, necessary construction, and other purposes. Consequently, in lieu of having a group of engineer battalions returned for conversion to other type engineer units, it is quite possible that a training center commander may find himself with other service elements of a corps or army on his hands (at least as far as the total number of men is concerned) with the job of converting them into a variety of ASF type units.

The types of units involved are an important consideration. The initial consideration must be based on the total number and type of units to be converted as against the total number and type of units to be formed.

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By such planning, maximum flexibility is retained. For instance, if an engineer general service regiment is to be converted into other units, it should not be decided initially that since there are about 1,130 enlisted men in such a regiment, five port companies of 226 men each should be formed. Such a decision, while sound numerically, would disregard not only previous training but intelligence levels, existing organization, and special skills.

It cannot even be taken for granted that conversion from one type unit to another within the same service is the proper answer. For instance, an engineer maintenance company could be converted more properly to an ordnance light maintenance company than to an engineer topographic company. Such a decision requires a consideration of related skills.

Another important aspect of the conversion problem is the desirability of retaining the *structural integrity* in units of company, and sometimes of battalion, size. No greater mistake can be made than to place all officers into one group and all enlisted men into another and start forming new units from scratch. It is far better to retain the structure of the old units where possible and to exchange, withdraw, or insert individuals as needed to meet the new T/O (Tables of Organization) requirement. In this connection, it is believed that a strong unit commander should be retained in most cases, even though his technical skill may be unrelated to the new task. With good technical assistants (lieutenants) the unit will make more progress initially than by assigning untried officers unknown to the unit. The same principle holds true for many noncommissioned officer assignments.

There is no substitute for tested leadership, and the majority of Army Service Forces officer and noncommissioned officer troop assignments are not as highly technical as some people would like to believe. Leadership is the key. Given that quality and the intelligence that commonly goes with it, the acquisition of new techniques is not an insolvable mystery. Due recognition is given, of course, to many officer and noncommissioned officer assignments that do require extensive previous education, training, and experience; for instance, medical officers, cryptographers, etc. As far as total numbers go, however, these are in the minority. When a smooth working organization exists, much thought should be given before it is completely disrupted. Personnel replacements up to forty or fifty percent may be absorbed without destroying the effectiveness of the administrative framework of the organization. One of the best and most highly technical battalions observed in Italy had a commander with no technical skill, but he was a good leader. His assistants were fine technicians. Together they made a great team.

In the conversion of the 2d Cavalry Division, units such as regimental service troops were utilized for conversion into truck companies. Battalion headquarters, because of a large number of intelligent administrative personnel, were converted into headquarters and headquarters detachments for quartermaster truck battalions, port battalions, and other administrative and command units of similar level. Units of the reconnaissance squadron were utilized as car companies and for an ordnance evacuation unit. Headquarters battery of the division artillery was reorganized into a headquarters and headquarters detachment for an ordnance ammunition battalion. The engineer squadron was split in two and by the addition of a cavalry squadron to each part, two engineer construction battalions were formed. These examples, which cover only part of the conversion of the 2d Cavalry Division, indicate the extent to which existing unit structures were retained with closely related skills utilized insofar as practicable. In the majority of cases, unit commanders were retained with technically qualified lieutenants and noncommissioned officers added to their organization.

In the problem facing us, it is important to determine at the earliest moment the number and type of units to be made available for conversion, whereupon Headquarters, Army Service Forces, must determine what new units are to be organized therefrom and at

what training centers this task will be accomplished. Needless to say, if unusual circumstances should require the conversion of an infantry division, the service elements of that division will be utilized insofar as practicable to form other units of the same service. Both in the infantry and artillery components, there would be found a large number of men with extensive experience in the technique of signal communication, motor vehicle operation and repair, and the administrative skills required to keep an organization in operation. There would also be found that quality of leadership which had been developed on the battlefield and which would pay dividends as individuals with this quality received assignment to other types of service. It is to the best interest of the Army and is essential to the morale of the individuals concerned that these talents be studied and utilized to the greatest possible extent. While a consideration of the type units involved, together with available skills, will permit basic decisions to be made here, the full utilization of these skills must be made at the training center level and will be discussed in the second phase.

As soon as it becomes possible to determine which old units will be converted into needed new units, close collaboration with the Chief of Technical Service must be arranged so that required and related military occupational specialties can be studied. As soon as the deficiency in required skills can be determined, the necessary school capacity should be established for training the required number of specialists, and the appropriate training centers should be informed so that available men can be placed in such training. If school-trained specialists in the necessary numbers can be trained and placed in storage, the problem of conversion after the receipt of existing units at training centers will be limited to the carrying out of such technical training as can be accomplished at the center itself. This will shorten the period required for the production of new units. Headquarters, Army Service Forces, after having determined the scope of this problem, must see that sufficient capacity exists or is established at training centers to cope with the problem with which each of the technical services may be faced. That there will be many difficulties in making such plans is evident, as is the fact that there will be many changes in such plans after they have once been made. Nevertheless, anticipatory planning kept up to date will simplify the problem which will face each trainer when the troops to be converted are actually placed in his hands. The constant dissemination of information on these plans through all echelons is extremely important in order that everyone concerned may be thinking about the problems, and thereby find a better and more intelligent solution when the time comes.

Problems to Be Solved by Training Centers

Before the actual arrival of any troops for conversion and redeployment training, it may be stated that training center commanders have two problems to be solved: first, to develop a plan for the reception, conversion, and training of the troops involved; and second, to select available excess personnel for specialist schools who can be trained to meet expected requirements. In this connection, reference is made to the brief discussion outlined above, whereby the Chief of Technical Service will determine what school training must be given to make up for expected deficiencies in certain military occupational specialties. When the school capacities have been established to absorb such students, the training centers will be informed that they can send excess personnel having the necessary aptitudes, with a view to completing school training as early as practicable and then using the graduates to assist in training at the training center and ultimately to be held in storage for the units to be organized through conversion.

The actual job of reception and handling of newly arrived troops in units slated for conversion is extremely important. Most of these individuals will have had combat experience or at least service in an overseas theater. They will probably have had furloughs since returning to the United States and before

arriving at the training centers. Until they are physically available to the training center commander, however, he will be dependent upon the action of others for the reorientation of the individuals concerned. In some cases, this may not be all that is desired. Extensive efforts are now being made to see that all individuals are kept currently up to date with problems of the war of immediate concern.

It is a sad commentary on military leadership that many responsible officers have not recognized the importance of keeping their men thoroughly informed. The work of the Information and Education Division in developing this idea and in proving conclusively through extensive field surveys the necessity and value of concentrating on this idea leaves no room for doubt as to its importance. This will be particularly true where men have served for long periods of time under great difficulties and the stress of combat in one theater and are faced with the likelihood or certainty of undergoing redeployment training for service in another theater. It calls for superior leadership. When such leadership is apparent the majority of opinions of those involved will be molded into supporting ideas and plans that are essential to successful execution of the war. (See "Postwar Planning and the Army Service Forces Training Centers" by Colonel L. W. Prentiss, GSC, in the MILITARY REVIEW December 1944.)

In the 2d Cavalry Division, *orientation for the new task* was accomplished by means of carefully explaining to the officers and men the problems immediately before us and the necessity for their utilization along new lines to assist in a very important operation. In addition to this, authorization was secured to permit them to keep their old insignia. This is a very important point, as men who are proud of their unit are more or less wedded to the insignia that represents it. In my opinion there are many important factors at the time a unit is broken up that make it desirable for the old insignia to be worn during the initial period of training of the newly organized unit. This may seem incongruous and certainly doesn't fit into existing War Department ideas, but if such permission can be granted during the training period, at least until the loyalty and esprit of the individual to his new organization can be established, there is no gap or drop in his morale due to this factor.

By the time such troops have arrived at a training center, their *personal adjustment problems* should have been well taken care of. In other words, they should have been properly clothed and paid before going on furlough. It is most important. Before these men can be expected to turn their wholehearted effort and support to the new task lying before them, their personal problems in the way of leave, pay, clothing, allotments, insurance, etc., must be cleared from the decks, and their records completed. When this is done and their worries as far as dependents are concerned have been minimized, their attention can then be concentrated on the training task ahead.

The next problem of major importance to the training center commander rests in the *classification and assignment of personnel*. We have already stated that where practicable, basic policies will probably be established to retain the structure of the units and to retain competent leaders in those units. Nevertheless, the great variation in the number and type of skills from the old unit to the new will require the study of each Form 20 or 66-1. In the conversion of the 2d Cavalry Division, the advance records of all skills available in existing units and the skills required for the new units were flown from the United States for planning purposes. This advanced information, together with a study of available Forms 20 and 66-1, was used to arrange a preliminary equitable distribution of required skills among the new units with specific attention to the key and critical specialists. Unit commanders should be consulted in the final details of converted assignment, since they are best acquainted with the individuals involved. With a view to conserving for optimum utilization any highly specialized manpower appropriate for units scheduled for subsequent organization, such individuals as

were found were transferred to a pool. This should be a more or less normal practice. The composition of newly organized units should be carefully checked by competent classification personnel. The importance of these procedures from the standpoint of proper job placement with resultant satisfaction to the individuals and resultant gains in the efficiency of the unit cannot be overestimated.

In addition to these considerations, it is extremely important that the *training and experience of each individual be evaluated* at the time of such classification. Units will be returned from the European Theater, for instance, which were shipped from this country at a time when their training was incomplete or at least not as extensive as is considered desirable today. These deficiencies should be remedied. Many service type units will not have had an opportunity for range practice since leaving this country. More scattered operations in the Pacific make it more necessary than ever that service troops be competent to use the arms with which they are equipped, and thus enjoy the confidence that comes to a soldier from such knowledge. In addition, all training must be reoriented to conditions peculiar to the Pacific areas. For instance, no troops that left for England before the middle of 1943 were given instruction in malaria control. We have learned through bitter experience that malaria can cause more casualties in the Pacific than enemy bullets. Through the development of sound instruction in malaria control, we have practically eliminated this menace insofar as individual care and hygiene are able to do. It is essential that all troops undergoing redeployment training for the Pacific areas be thoroughly instructed in this field. The demands of operations in overseas theaters have also prevented sufficient military instruction from being carried on concurrently in many cases. The probability that many units in the Pacific area will find themselves operating in small groups stresses the need for the very highest standards of basic military training together with the development of the noncommissioned officer as an individual capable of exercising real responsibility. All in all, the evaluation of these troops will unquestionably indicate that some period of basic military training is necessary before the initiation of basic technical training.

After a consideration of all prior details, it should then be possible to reorganize these units along the new T/O lines. At this time, lieutenants with proper technical background and the school-trained specialists referred to above will be inserted in the units. These school-trained specialists will be of great assistance in carrying out the technical training that can be accomplished at the training center itself. Following this period of several weeks, coupled with the period of field training, the new unit should be prepared to leave for service in the new theater within a minimum period.

Those concerned with training policies, procedures, and programs for the training of Army Service Forces units are now busily engaged with a study of possible revisions in existing programs that may be necessary in order to completely orient all training to the Pacific Theater. In adjusting such training to the requirements of tropical warfare, we cannot overlook the fact that as we close in on Tokyo, both the terrain and the climate will be anything but tropical at many places. This will be particularly true for any part of our advance that may be undertaken by way of the Aleutians and Kuriles. Consequently, while our training must be oriented to the Pacific, we must still be prepared to fight under greatly varying conditions of climate and terrain.

Those concerned with this training should also be familiar with War Department Readjustment Regulations, which are being issued at the present time. These regulations, known as the RR series, are just coming off the press, and while they have but little of training value in them to date, they prescribe administrative procedures with which those on the receiving end should be thoroughly familiar. In addition to being familiar with such regulations and training programs, we will be faced with sizable problems as re-

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gards the handling of T/O equipment. While it is not expected that units will be returned to this country with complete T/O equipment, our limited surplus of such equipment certainly makes it apparent that much of it will have to be returned either with the troops themselves or as bulk shipment for reissue. This will be particularly true for such items as heavy construction equipment, artillery, tanks, and many others. The collection of excess items of equipment and the issuance of new items of equipment, together with difficulties of transportation, storage, and distribution of such matériel will call for alert, intelligent thinking.

All in all, it may be said that the training task, together with allied administrative problems, will be a very substantial one after V-E Day. In the interest of carrying out that task efficiently and quickly, careful prior planning should be undertaken by all echelons with the least practicable delay.

The German Battleships

From a British source.

THE German Navy once had four great battleships. One by one they went. First the British Navy sank the *Bismarck;* next the *Scharnhorst;* and now the RAF has sunk the *Tirpitz.* Only the *Gneisenau* still floats, and she is lying dismantled and useless in Gdynia.

Though they have made forays into the open sea in search of merchantmen, not one of these great ships has ever deliberately sought to engage a naval enemy. They refrained from attacking convoys when British naval ships were known to be present. In fact, they were designed with a speed intended to avoid such combat, and with armor intended to withstand a tremendous pounding if they ever failed to avoid it.

Such ship designing is perfectly consistent with the naval strategy Germany has pursued ever since that day when the Kaiser's High Seas Fleet withdrew from the Battle of Jutland, to remain cooped up in its harbors for the rest of the war. The central idea of this strategy is "the fleet in being." The task of the German Navy has not been, as Admiral von Trotha declared of the *Tirpitz,* "to carry German honor into the world." More accurate was the statement by Admiral Leutzow when he said that it was "not to fight sea battles, but to act as a constant and systematic menace to British shipping."

Although this strategy has now failed, it cannot be said that it has been useless to the Germans. The mere existence of these huge ships has compelled the British Navy to keep a large fleet forever watching the North Sea, in case one or more of them should venture out to raid merchant shipping.

If the Germans had been less exclusively "land-minded" they might have known that their "fleet in being" strategy was bound to fail in the long run and have planned accordingly. In the last war the German Navy could take refuge in safe harbors. But in an age of air power no harbors are safe. A fleet at anchor is highly vulnerable to attack, as the British Navy's air arm demonstrated as long ago as Taranto, and on many occasions since. The *Tirpitz* herself was incapacitated, mostly by naval air and RAF attacks, during twenty-seven out of the thirty-two months between her first operation and her end. The *Scharnhorst* and *Gneisenau* did better; they sank twenty merchant ships during one brief foray into the Atlantic.

There are still some formidable ships of the pocket battleship and cruiser classes in the German Navy that may still be serviceable, and there are still some important jobs to do, such as that performed by the Home Fleet off the coast of Norway when it destroyed a German convoy within a few hours of the sinking of the *Tirpitz.* So a sizeable fleet must remain in the North Sea.

Who Gets the Ribbons--and Why

MAJOR MARY S. BELL, *WAC*
Instructor, Command and General Staff School

MILITARY awards serve a two-fold purpose. First, they are public recognition of a nation's gratitude for acts and services of exceptional gallantry and fidelity. Secondly, they are a constant incentive to the performance of outstanding deeds. All awards should be made with discernment and justice. No deserving individual should be overlooked.

Much emphasis should be placed on the careful preparation of recommendations since many cases may be unfavorably considered if the recommendations do not clearly and adequately present the subject. Recommendations should be strongly worded, precise, and complete in detail of facts.

Recommendations for awards may be initiated by any officer. The certificates or affidavits of two or more witnesses should be attached. Recommendations should be addressed to the commander authorized to grant the award. Each case should be submitted separately and forwarded through proper command channels. Each commander should personally indicate his recommended approval or disapproval.

The detailed facts which must be included in the recommendation are stated in paragraph 20, AR 600-45. An outline for a recommendation is given on page 34, and on page 35 there is a check list to aid in preparation. Higher headquarters often can guide lower echelons in processing recommendations.

Presentation of awards should be made (1) promptly, (2) at special ceremonies, (3) in the presence of the soldier's comrades, and (4) by the highest commander available.

None of the decorations is issued more than once to any one person (except in the case of the posthumous award of the Purple Heart). For each succeeding deed, act, or achievement sufficient to justify an award, a Bronze Oak Leaf Cluster is awarded in lieu thereof. A Silver Oak Leaf Cluster equals five awards of the Bronze Oak Leaf Cluster.

The table on pages 32 and 33 shows Army decorations and the regulations governing their award. They are presented in four groups: combat, meritorious service, those restricted to aerial flight, and organizational awards.

Attention is called to the Infantryman Badges. These are awarded to officers and enlisted men assigned to regiments or lower infantry units, except medical personnel and Corps of Chaplains. The Combat Infantryman Badge is the higher; it is awarded for exemplary conduct in action against the enemy. The Expert Infantryman Badge is awarded for satisfactory conduct in action against the enemy, or for attainment of War Department standards of efficiency. (See WD Cir 269 and 322, 1943; and Cir 186 and 271, 1944.)

Campaign medals have been authorized to mark service either in a particular campaign, or at a particular time, or for a given area. Those pertinent to World War II are the two service medals (the American Defense Medal and the Women's Army Corps Medal) and the three for the major theaters (the American, the European-African-Middle Eastern, and the Asiatic Pacific).

Decorations are worn only on formal occasions; but for habitual wear the service ribbons are worn. Service stars are worn on ribbons to indicate credit for battle participation. One bronze star 3/16 inch in diameter is worn on the pertinent ribbon for participation in each battle or campaign announced in War Department General Orders. If more than five bronze stars have been earned, silver service stars may be substituted for the bronze in the ratio of one to five.

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ARMY DECORATIONS

I. COMBAT DECORATIONS

In Action Against an Armed Enemy

Precedence	*Decoration*	*Awarded to*	*Awarded for*	*Awarded by*	*To Members of Armed Forces of Friendly Nations*	*Can Be Awarded to Civilians*
1	Medal of Honor (1862 - War) Army only	Officers and enlisted men of Army	Conspicuous gallantry in battle at risk of life beyond call of duty. Par 9, AR 600-45	War Dept only	No	No
2	Distinguished Service Cross (1918 - War) Army only	Persons serving in any capacity with the Army	Extraordinary heroism in action against the enemy. Par 10, AR 600-45	(1) WD or theater commander (2) or may be delegated to subordinates commanding any force of appropriate command of Major General or higher	Yes	Yes
5	Silver Star Medal (1918 - War) Junior DSC	Persons serving in any capacity with the Army	Gallantry in action, not warranting the Medal of Honor or DSC. Par 13, AR 600-45	Same as above	Yes	Yes
8	Bronze Star Medal (1944 - War)	Persons serving in any capacity with the Army	Heroic achievement, *not involving participation in aerial flight.* Par 15½, C-1, AR 600-45	Same as above	Yes	Yes
10	Purple Heart (1782 - 1932 War)	Members U.S. Armed Forces and civilians, U.S. citizens serving with the Army	Wounded as result of enemy action, provided needs treatment by medical officer. Par 16, AR 600-45	(1) WD or theater commander (2) Commander any General Hospital in U.S. (3) Commander may delegate authority to any U.S. Army officer	No	Yes

Heroism Not in Combat

7	Soldiers' Medal (1926 - Peace or war) Army only	Military personnel	Heroism, voluntary risk of life, not in combat. Par 15, AR 600-45	Same as above	Yes	No

II. FOR MERITORIOUS SERVICE

3	Distinguished Service Medal (1918 - Peace or war) Army only	Persons serving in any capacity with the Army	Exceptional service in duty of great responsibility. Par 11, AR 600-45	War Dept only	Yes, only after approval of the President	Yes
4	Legion of Merit (1942 - Peace or war) Junior DSM	Persons serving in any capacity with the Army	Exceptionally meritorious achievement. Par 12, AR 600-45	Commanders specifically authorized by WD. May not be delegated	Yes, only after approval of the President	No

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Precedence	*Decoration*	*Awarded to*	*Awarded for*	*Awarded by*	*To Members of Armed Forces of Friendly Nations*	*Can Be Awarded to Civilians*
8	BRONZE STAR MEDAL (1944 - War)	Persons serving in any capacity with the Army	Meritorious service, *not involving participation in aerial flight.* Par 15½, C-1, AR 600-45	(1) WD or theater commander (2) or may be delegated to subordinates commanding any force of appropriate command of Major General or higher	Yes	Yes
11	MEDAL FOR MERIT (1942 - War)	Civilians of U.S. and friendly foreign nations	Exceptionally meritorious service. Par 28, AR 600-45	President of U.S. after recommendation from Medal for Merit Board	Yes (Civilians)	Yes (Only to civilians)
12	TYPHUS COMMISSION MEDAL (1942 - Peace or war)	Military personnel or civilians	Meritorious service in typhus control. WD Cir 142, 1944	Secretary of War for the President	Yes	Yes
13	GOOD CONDUCT MEDAL AND CLASPS (1941 - Peace or war) Army only	Enlisted personnel of Army (includes WAC's)	Exemplary behavior, efficiency, fidelity during specified period. AR 600-68	Immediate commanding officers	No	No

III. AWARDS RESTRICTED TO AERIAL FLIGHT

(Air Force personnel are also eligible for the other decorations herein described)

6	DISTINGUISHED FLYING CROSS (1926 - Peace or war)	Members of the AAF	Heroism or extraordinary achievement in aerial flight. Par 14, AR 600-45	(1) WD or theater commander (2) or may be delegated to subordinates commanding any force of appropriate command of Major General or higher	Yes	No
9	AIR MEDAL (1942 - Peace or war) Junior DFC	Persons serving in any capacity with the Army	Meritorious achievement while flying. Par 17, AR 600-45	Same as above	Yes	Yes

IV. ORGANIZATIONAL AWARDS

Worn on right breast	DISTINGUISHED UNIT BADGE (1942 - War) Army only For valor	Individuals assigned or attached to units cited in WD General Orders	Conspicuous battle action. Unit must distinguish itself as an individual who merits the DSC. Sec IV, WD Cir 333, 1943	(1) Theater, army, or air force commander, for company, battalion (AAF squadron or group) (2) WD for larger units	No	No
Worn on right sleeve	MERITORIOUS SERVICE UNIT PLAQUE (1944) Army only For service	Individuals assigned or attached to units awarded the Meritorious Service Unit Plaque	Superior performance of duty and maintenance of high standard of discipline by service units. WD Cir 345, 1944	Commander of any force which is appropriate command of a Major General or higher	No	No

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OUTLINE FOR RECOMMENDATION
(See Par 20, AR 600-45)

_____
_____
(Unit)

_____ (Date)

201-_____
(Name)

SUBJECT: Recommendation for award of_____
(Name of Decoration)

To: Commanding General,_____ APO_____

1. It is recommended that the following named individual be awarded the_____
_____
(Name of Decoration)
_____
(Last name) (First name) (Middle name or NMI) (Jr)
_____
(Rank or grade) (Army serial No)
_____
(Organization, including arm or service)
_____
(Name, address, relationship of next of kin—for posthumous award)
_____
(City and state from which individual entered military service)

2. A complete, yet concise, description of the act. Include the following when applicable: character of the terrain, of hostile observation, of enemy fire; visibility; time of day; atmospheric conditions; proximity of enemy; morale of our forces and of enemy; casualties sustained; effects or results of deed.

3. _____
(State exact status of person at time of deed or service)

4. The entire service of this individual_____been honorable since the rendition of this service.
(has) (has not)

5. This recommendation_____supported by an official record. (If so, include extract of record.)
(is) (is not)

6. *a.* I_____personal knowledge of the act (or service) for which this award is recommended.
(have) (have not)

b. Certificate and/or affidavits of eye witnesses or persons having personal knowledge of the facts are inclosed as follows:_____
_____
(List names of individuals who have submitted testimony)

7. A recommended citation is attached _____
(in double-spaced draft form)
_____

_____
(Signature)

_____
(Rank and arm or service)

_____
(Position held)

(List inclosures individually)

CHECK LIST FOR RECOMMENDATIONS

1. Suggest specific decoration.
2. Address to commander authorized to grant award.
3. State full name, serial number, organization (including arm or service).
4. State grade and assignment at time recommendation submitted.
5. Name, address, relationship of next of kin.
6. City and state from which entered service.
7. For combat, include specific information in paragraph 20 (5), AR 600-45.
8. If for service over period of time, include exact period.
9. For Purple Heart, include certificate of medical officer.
10. Grade and assignment at time service rendered.
11. State that service has been honorable since act or service performed.
12. If supported by official record, attach copy.
13. State writer has or has not personal knowledge of act or service.
14. Two or more certificates or affidavits.
15. Recommended citation.
16. If individual evacuated, report date and place to which evacuated.
17. Submit each case separately.
18. Send forward through command channels.
19. "Approved" or "disapproved" in each indorsement.
20. List inclosures.
21. Submit five copies.

New Aerial Strip Camera

From an article by Major Robert H. Unseld, Photographic Laboratory, Engineering Division, ATSC, in *Air Force* December 1944.

THE newly developed type S-7 camera, which makes pictures 9½ inches wide and up to 200 feet in length, is producing some of the most remarkable aerial reconnaissance photos of the war. Its prime military importance is not its ability to photograph ten or eleven miles of terrain in one unbroken strip, but the amazing sharpness of detail in the pictures taken, and the remarkable ability to produce successful photos under adverse lighting conditions.

In a recent test flight, for example, the pilot passed over a clothesline at better than 400 miles an hour, altitude 300 feet, and in the photo strip, with the aid of a magnifying glass, you could count the buttons on a shirt waving in the wash-day breeze!

Photographic interpreters need large-scale pictures taken at low altitudes because high-altitude shots suffer from diffusion of detail and frequently lack sharpness. But in tree-top level aerial photography, the shutters of single-exposure cameras are not fast enough to stop the motion of the ground as it streaks past the lens.

Instead of a shutter, this "strip" or "continuous strip" camera has a narrow slit extending across the width of the film, past which the film is moved at a constant rate of speed. When adjusted to the speed and altitude of the airplane, the film—black-and-white or color—flows across the lens toward the nose of the plane at the same rate as the image of an object on the ground goes past in the focal plane. The light reflected from an object on the ground strikes the same spot on the film as it crosses from one side to the other of the aperture slit, and the apparent motion of the earth is stopped—giving the equivalent of a very fast shutter speed. Thus, in the final picture, there is no blur or fuzziness and even minute objects are clean-cut and clearly defined.

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Malaria Control Problems of a Base Surgeon

COLONEL C. W. HARDY, *Medical Corps*
Instructor, Command and General Staff School

AT the outset of the war, malaria raised its ugly head high enough to be recognized as an enemy possibly even greater in destructive and disabling power than any human enemy. Malaria did raise the devil with our gallant little army on Bataan. It was given credit for assisting the Japs in conquering the Philippine Islands. We all realized that before we could win on any front, we must in some way eliminate malaria or control its development amongst our troops. Coincidental with this decision was the realization that malaria control was not a purely medical problem and responsibility; that prevention of disease was not merely a moral obligation to preserve the health of our troops as human beings. It was a military problem upon the solution of which the success or failure of a military operation might depend.

"Preservation of the fighting strength" became more than a motto. Its reality was as important as the supply of ammunition, weapons, food, and engineer equipment. Human beings suddenly became weapons without which no war could be waged. Measures were immediately instituted to fight this enemy which, though showing no partiality to either side, could determine the winner.

Knowledge of control of malaria dates back to Cuba and to the construction of the Panama Canal, but in peacetime it had presented no great problem so far as troops were concerned. Commanders could take time to prepare against the disease, and training areas for maneuvers, etc., could be surveyed ahead of time and avoided if necessary. War does not permit this selection and preparation ahead of time. In some places, our Army had never before encountered territory so highly malarious. Furthermore, territory had to be secured from the enemy *before* malaria control could be started and the occupying troops had to be protected until control of malaria-bearing mosquitoes could be completed.

With the loss of our source of quinine to the Japs, a substitute was necessary, and this was found in the form of Atabrine, a chemical synthesized from an aniline dye. This drug, though not completely protecting an individual against infection with the malaria organism, would control the development of the disease. Atabrine permitted us to occupy enemy-held territory, highly malarious though it might be, and then institute those other control measures which would eliminate the mosquito, the vector of the disease. Its use was instituted as a military measure to maintain as many men as long as possible in the combat area. The fact that later, when and if a man stopped taking the Atabrine, he might break down with disease could not be given consideration. The military necessity was too great; human beings must be maintained as a fighting weapon, aside from humanitarian consideration. However, do not think that the humanitarian side of the problem was cast overboard. Every effort was made as early as possible to control the transmission of malaria by control of the carrier, the Anopheles mosquito. These measures were in the form of prevention of breeding of mosquitoes; protection of individuals from the bite of the insect by use of repellents on the exposed skin; use of head nets, gloves, long sleeves, and slacks. Also malaria patients were protected from bites, since only infected mosquitoes are dangerous.

Malaria control units go in early with the engineer troops and under the division surgeon's supervision make surveys and begin the preliminary work. Breeding places of mosquitoes are discovered and plotted on a map. Areas to be drained and lines of drainage are indicated. Oiling of all still water in so far as is possible is done immediately. The ground work is laid.

All this is of prime importance to the base surgeon when he arrives. Now begins the even more difficult problem of completing the initial program, keeping malaria control ahead of the expansion of the base and maintaining malaria control discipline.

Disease prevention of whatever kind is attained by constant and continued vigilance

only. Work does not cease with the mere institution of control measures. As a matter of fact, the institution initially of those measures is the easiest part. But to be effective, they must be maintained with ever increasing efficiency. As their effects are observed and the first fruits of our efforts bring that justifiable satisfaction of apparent success, we may be lulled into a false sense of security. The big picture soon fades, the malaria rate begins to go down, few mosquitoes are seen, and everyone relaxes—except the surgeon. His reports show that the malaria rate has indeed subsided but specific reports from station hospitals show that there are too many new cases, too many recurrent (break through) cases. He sees too many men (and this term includes officers) in rolled-up shirt sleeves or no shirts at all after sundown. He sees men bathing in streams or showers after sundown. There are too many pools of still water which could be drained, or unoiled pools that can't be drained but require oiling. His medical inspector reports Atabrine tablets on the ground near mess lines or on mess hall floors. About this time all but one of five malaria control units are withdrawn and moved forward. He sees his malaria rate becoming stationary or displaying an upward trend. Now his troubles begin.

Bulletins, notices, directives, personal pleas are issued thick and fast. Roadside posters, movies, and other propaganda follow in kaleidoscopic sequence. Investigation of cases in hospitals invariably reveals some breach in malaria control regulations. No criticism of unit commanders is voiced though many fail to realize that enforcement of sanitary regulations, like all regulations, is a command responsibility. Everyone is so busy with more tangible, immediate, and personal problems and responsibilities, and usually it is taken for granted that malaria control is entirely and exclusively a medical responsibility.

With the loss of malaria control units, supervision of unit control measures is difficult, and observation in one instance showed complete lack of basic knowledge in the use of one measure—the oiling of water. In this instance a soldier was observed diligently spraying a dry roadside ditch. "What are you doing?" the soldier was asked. "I'm spraying the ditch to prevent mosquito breeding." "Do you think mosquitoes would breed in that ditch?" "Well," hesitantly, "I don't know." "What do you have to have in the ditch in order that mosquitoes would breed there?" The soldier finally answered, "You need water in the ditch," and then added, "No, sir, I don't think mosquitoes would breed in that ditch, but I was told to go out and spray the ditches with oil—and that's what I'm doing." So then we started a training program!

A School for Sanitary Technicians was established. Each separate unit sent a noncommissioned officer, or a private of equal capabilities, to this school. The course was for one month, forty-eight hours a week, and covered not only malaria control, the major subject, but all other sanitary control measures. Response was good, and on return to the unit the graduate became the unit "Sanitary Technician." Substitutes for "poor selections" who failed the course were detailed with the one remaining malaria control unit for individual training. Subsequently, similar schools were initiated at other bases and at the same time all bases were directed to establish and conduct "Malaria Schools" which *all* officers would attend. The program called for a three-day course for line officers and a six-day course for medical officers, running concomitantly. The three extra days for medical officers covered the clinical aspects of malaria and its treatment. Finally, enforcement of the regulations establishing malaria control as a command responsibility by the base commander completed the picture. What additional measures were instituted or how long and well these earlier measures were carried out is not known. We do know that from a malaria rate so high as to warrant consideration of abandonment of the site as a base, a decline to a very low present rate (August 1944) indicates that malaria can be controlled if we all work at it.

Armored Infantry

LIEUTENANT COLONEL J. B. EVANS, *Infantry*
Instructor, Command and General Staff School

IN order that coordination and cooperation may be attained to the highest degree between the units of an armored division it is necessary that every officer of that division know the organization and characteristics of armored infantry. Its special equipment, armament, organization, and training to operate with tanks in battle make it a highly specialized organization. Armor when properly employed will seldom enter combat without the protection of infantry. If armored infantry is not available, motorized or foot infantry will be employed. And in addition, motorized or foot infantry has been employed to support the tanks even when armored infantry was available and was used.

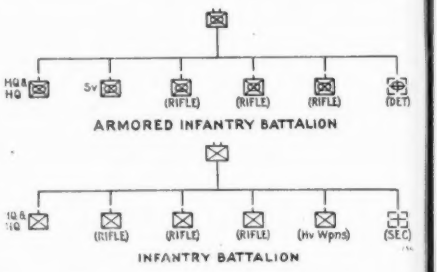
The question may arise as to the value of having infantry in close support of tanks. Some may say the only value of infantry is to hold the ground once it has been captured by the tanks. This is a common misconception of how infantry and tanks work together. The tank with all its armor and armament is still the prey of every gun no matter how small the caliber. We teach our infantrymen to shoot at tanks with their rifles to make them button up and thus become more or less blind. New methods of destroying tanks are appearing constantly in combat. When the tank is taken under fire it must button up to exist. When it does, its vision is restricted; it cannot find all the weapons operating against it so it needs assistance, and this assistance is furnished by the infantry. Armored infantry with its armored vehicles is better able to follow the tanks in combat and thus able to render this needed assistance closer than can regular foot infantry. We have learned from bitter experience that in order to lengthen the life of a tank we must have infantry, preferably armored infantry, in close support of the tanks; tanks and armored infantry are inseparable.

ORGANIZATION

An armored infantry battalion is organized somewhat similarly to the infantry battalion.

The armored infantry battalion is composed of a headquarters and headquarters company, a service company, three rifle companies, and a medical detachment.

The headquarters company is in effect the heavy weapons company of the battalion. Here we find an assault-gun platoon, a mortar platoon, a machine-gun platoon, and the



reconnaissance platoon. These platoons may be given the mission of supporting the action of the battalion or they may be attached to the rifle companies for support of the company's action.

The armored infantry battalion is organized as a separate battalion and as such has no parent regiment to look to for service and administration. Therefore, we find a service company and medical detachment organic within the battalion.

Each rifle company is composed of three rifle platoons and an antitank platoon. Within the rifle platoons we find the 60-mm mortar and light machine gun as organic weapons of the platoons. The antitank platoon as an organic part of the rifle company renders close antitank support to the company.

The infantry battalion is composed of a headquarters and headquarters company, three rifle companies, a heavy weapons company, and a medical section. (The medical section is a part of the parent regimental medical detachment.)

The headquarters company differs considerably from that of the armored infantry

battalion. Here we find the communications platoon, the ammunition and pioneer platoon, and the antitank platoon. The latter provides antitank support for the battalion and may be reinforced from the antitank company of the parent regiment.

Each rifle company is composed of three rifle platoons and a weapons platoon, the main difference here being that the weapons are grouped together to form a platoon rather than being organic to each rifle platoon.

Within the heavy weapons company we find the heavy machine guns and mortars, but there are no assault guns organic to this company. The comparison shows us, then, that the armored infantry battalion with its organic assault guns, its superiority in numbers of antitank guns, machine guns, and mortars, is capable to a limited extent of operating on independent missions. The infantry battalion, although equipped with machine guns, mortars, and antitank guns, is dependent upon its parent regiment for additional antitank and infantry howitzer support in its operations.

Characteristics

Keeping the organization of the armored infantry in mind, let us consider the characteristics of the armored infantry and compare them with the characteristics of infantry. By this comparison we will be better able to understand the capabilities and limitations of the armored infantry.

Just what are the most important characteristics of the armored infantry? They are: (1) mobility, (2) fire power, (3) armor protection, and (4) flexibility.

1. Mobility.—Just what do we mean when we use the term "mobility" in connection with armored infantry? In this case, I believe we must confine our definition strictly to "battlefield mobility." In moving units by truck into combat, we can take them just so far before it is necessary to dismount. This point is usually just to the range of effective enemy artillery fire. But in the case of armored infantry, this does not apply. Being mounted in armored half-tracks, armored infantry is able to proceed beyond this point and can continue to advance mounted until forced to dismount either by the terrain or by armor-piercing shells or direct high-explosive fire of large-caliber guns. It is not the intention to create the impression here that armored infantry proceeds into battle mounted and fights from the vehicles. Armored infantry does have vehicles with sufficient armor to allow it to proceed without breaking formation beyond the point where foot infantry is forced to deploy. However, when armored infantry does arrive within antitank-gun range or comes under direct shelling by enemy artillery, it is forced to dismount and continue the fight on foot. In moving up to the dismounting point, armored infantry uses any of the formations used by foot infantry—the wedge, echelonment right or left, column, or line. But what happens to the vehicles after the troops dismount? Do they hightail it to the rear or do they stay up where they can be of some use? To answer those questions we must remember the armament of the vehicles. Each squad personnel carrier of the rifle squads and the 60-mm squad has a .30-caliber water-cooled machine gun mounted on it. The half-tracks of the rifle platoon headquarters and the light machine-gun squads have .50-caliber machine guns mounted on them. And in addition we have the 81-mm mortar carriers. Use these vehicles in positions from which their weapons can be brought to bear upon the enemy and you have a mobile weapon which is a lot less vulnerable to enemy artillery fire than are the same weapons in the regular infantry. And in addition, if these vehicles are kept close to the troops they can be readily used in making any maneuvers where the situation and terrain are suitable for vehicle use. The situation, terrain, and a good deal of common sense will determine how many vehicles can be brought up and how close they can be used in all cases.

2. Fire Power.—Let us consider the characteristics of fire power as applied to the armored infantry and compare that of the armored infantry battalion with that of the infantry battalion. First, just what is the definition of the word "fire power"? The

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Dictionary of Army Terms says: "Fire power:—The ability to deliver fire; the amount of fire delivered by a unit or by a particular weapon." Considering this definition is comparing the fire power of the two units. It is not believed that we can say that the armored infantry battalion has any greater ability to deliver fire than does an infantry battalion. However, when we think of the amount of fire delivered, it is quite obvious that when we look at the number of automatic weapons in each unit we do find that the armored infantry outnumbers the infantry two to one in light machine guns, nearly five to one in heavy machine guns, and over nine to one in .50-caliber machine guns, while the infantry battalion outnumbers the armored infantry forty-five to one in automatic rifles. Considering this and keeping in mind that supply of ammunition is a factor in reckoning the amount of fire that can be delivered, we can draw the conclusion that the armored infantry, when its vehicles are close up where they can be used to support the troops and the supply of ammunition for the dismounted guns is close, has greater fire power than does the infantry battalion. However, without the vehicles the armored infantry does not have greater fire power. It has not been trained nor equipped to fight a great distance away from the vehicles; while it can use these vehicular weapons dismounted, there are no trained ammunition carriers, and where the infantry battalion has its automatic rifle, the armored infantry has no such light automatic weapon to take its place.

3. Armor Protection.—Within the armored infantry battalion we find each squad riding in an armored vehicle. With the exception of the assault gun platoon, these are all half-tracks with a protecting armor of quarter-inch steel plate. This armor affords protection from .30-caliber ball ammunition at all except extremely close ranges; from .30-caliber AP ammunition at ranges over 300 yards; and from .50-caliber ammunition at ranges over 1,000 yards. The assault gun platoon now has three medium tanks carrying 105-mm howitzers and the same armor as the medium tank. Keeping in mind that this armor does not extend over the top of the half-track vehicles, we can see that it affords enough protection to the personnel so that the vehicles can be used well forward. The armored vehicles of the armored infantry do afford protection to the weapon and crew from all except direct hits. Vehicles with mounted weapons used in carrier defilade have the advantages of the armor protection over the infantry battalion weapons. These armored vehicles are considered as combat vehicles and as such are not limited to transporting personnel behind the lines.

4. Flexibility.—In regard to the flexibility of the armored infantry, we can best describe it in two ways: first, flexibility in organization; and second, flexibility in employment. Each organization within the armored infantry battalion is organized and equipped to operate as a separate detachment. The weapons platoons of the headquarters company are complete within themselves and may be attached to or placed in support of any organization within the battalion, thereby increasing that organization's fire power while not decreasing its mobility.

And as for its flexibility in employment, armored infantry is capable of attack, defense, and advance or flank guard operations. Being highly mobile, it is capable of close support action with tanks in combat. It can make wide envelopments either in the attack or counterattack. In the defense, the fire of its weapons on the vehicles can be shifted quickly in any direction to meet an attack.

MISSIONS

Let us consider some of the missions which are favorable for an armored infantry battalion. We could name any number of missions for armored infantry and when they were all analyzed we would find but one primary mission, and that would be *the close support of tanks in combat.*

In carrying out this mission there are numerous roles it may be called upon to play, and some of these roles may be:

1. To seize ground from which tanks may attack.

2. To destroy or neutralize antitank weapons.

3. To follow the tank attack closely and assist by fire in seizing the objectives, to mop up, and to protect the reorganization of the tanks.

4. To protect tanks in bivouac, on the march, in assembly areas, and at rallying points from enemy personnel executing antitank measures.

5. To form a base of fire for the tank attack with artillery and supporting weapons.

6. To remove obstacles, especially mines, holding up the tank attack.

7. To attack in conjunction with tanks.

8. To protect tanks while passing through towns, forests, stream crossings, jungles, or narrow defiles.

EMPLOYMENT

How can we best employ armored infantry to carry out its primary mission of close support of tanks?

Certainly the primary thought to keep in mind is that in order to keep armored infantry available for the close support of tanks, it cannot be used as a roustabout for the division. The timeworn phrase, "depending on the situation," seems to apply more to the employment of armored infantry than in any other case. At the beginning of the war the Germans found that the "blitz" idea worked to perfection. But when they came up against a determined enemy, they found that tanks alone could not win. The infantry would allow the tanks to pass over them and then emerge from their foxholes to isolate the tanks from their supporting infantry, which caused the Germans to change their tactics, giving tanks limited instead of distant objectives and in some cases following a wave of tanks by a wave of infantry to protect the former. So it was found that tanks necessarily had to have infantry to support them closely, and therefore the tempo of the "blitz" was slowed down to keep pace with the infantry.

But how can the armored infantry best give this close support to the tanks?

Tanks are vulnerable to mines and to antitank weapons fire; infantry can take these in their stride. Infantry is vulnerable to automatic weapons fire which is "duck soup" for tanks. Use your armored infantry to clear these mine fields and destroy these antitank guns in conjunction with the armored engineers, but support them closely during this operation by the fire of the tank weapons and armored artillery against the automatic weapons. Tanks can capture an objective but infantry must be in close support to do the mopping up operations and secure the objective while the tanks reorganize and prepare to move to the next objective. Armored infantry, because of its high battlefield mobility, can be used for this purpose. But remember, armored infantry must be relieved from the role of holding this objective as soon as possible so that it may resume its primary mission of close support of tanks.

It has been debated pro and con whether armored infantry can be used in defense. The consensus of opinion is that it can be, but here again we must remember that it should be used in such a role only when it becomes absolutely necessary and must be relieved to continue the close support of tanks when the situation swings and allows tanks to take up the offensive again. An armored infantry battalion can defend a sector 800 to 1,800 yards in width. This sector is defended in much the same manner as used by the foot infantry. All-around defense is planned and executed by each organization.

The question may arise as to who will furnish the security. This generally comes from the reserve company. A platoon will be in position well forward of the main line of resistance and have with it all its organic vehicles. In addition, you will also find observers from the artillery, 81-mm mortar platoon, and assault-gun platoon up with the security. These platoons will, of course, be given the mission of delaying and deceiving the enemy. They will have the support of the artillery, 81-mm mortars, and assault guns. When the position of these security groups becomes untenable or when ordered to withdraw, they will do so using their vehicles to

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make a quick withdrawal. They should not stop at the main line of resistance but go directly to the prepared positions of the reserve company.

In its organization and characteristics, armored infantry can be likened to cavalry and infantry. Like infantry, it combines fire, movement, and shock action to close with the enemy and destroy him, and like cavalry, it has a high degree of battlefield mobility, a special value in the rapidity and ease with which its weapons can be moved from one position to another. Furthermore, it too habitually maneuvers mounted but does its fighting on foot, and as a rule, mounted maneuvers are combined with dismounted action. Combining these characteristics, we find an organization which can easily perform its primary mission, *the close support of tanks in combat.*

The Japanese Soldier's Food

From *Air Force* December 1944.

How well does the Japanese soldier eat? By American standards his pickings are pretty slim, but by Japanese home standards he is an extremely well fed individual. On the basis of variety and abundance, a soldier in an adequately supplied garrison eats perhaps twice as well as his family.

To the Jap soldier, as to the folks at home, rice is still the most important food. The average Japanese family eats but little meat, the daily diet revolving around the basic rice-fish-vegetable diet. This combination has been supplemented for the fighting man with some meat, fruits, extra vegetables, and sweets. These extras, however, are used chiefly to flavor and vary the rice-fish staple, and do not provide a complete change of ration from one day to the next.

The Japanese Army, even in rear echelons, has nothing comparable to our company or squadron mess. Each soldier is his own cook, and he usually prepares enough at one time to supply him for the next twenty-four hours.

The Japanese field rations include canned meat such as beef, pork, and stew; canned fish; canned vegetables, including beans, bean sprouts, peas, bamboo sprouts, spinach, water chestnuts, and cooked rice; canned fruit; canned eggs; dehydrated vegetables, including most of the familiar varieties plus such items as edible seaweed and a starchy tuber known as taro root; dehydrated fish (bonito); condiments; staples, such as rice, granulated sugar, and salt; beverages, including tea, condensed or powdered milk, cider, and whisky; and chocolate or other candies.

The Jap soldier going into combat usually carries rice and bags of small, hard biscuits. Whenever possible, he carries canned meat. In addition, there are two types of especially packaged rations, a package per meal. In one type, the package contains cakes of compressed wheat or barley, sugar, cakes of dried fish, and cakes of salty dried plums. The other type contains two cakes of compressed fish and vegetable mixture and a sack of pre-cooked rice flour. Jap soldiers mix the flour with water to make a dough, which they eat cold.

There are several types of emergency aviation rations. One includes dried bonito, biscuits, pickled plum, peas, hard candy, caramels, chocolate, and whisky. Another air ration includes rice cakes, hardboiled eggs, canned meat and vegetables, canned pineapple, cider, chocolate, and whisky.

It is important that captured enemy food be inspected and approved by a U. S. medical officer before our troops eat it. In emergency circumstances, when there is no way to get it inspected, it is well to keep in mind that the safest of all would be canned foods, provided that the can does not bulge, that the can is not badly rusted, and that the contents do not yield any kind of questionable odor.

Don't Give Up the Ship

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FLASH—the U.S.S. *Mariopolis* has been sunk; a gallant fighting ship has gone down with her colors flying! The main reaction to this news by most of us is shock—sorrow for the loss of so many fine men. Few of us, however, give more than a passing thought to the great loss in labor and material involved in the sinking of the ship, and few also note that a finely tempered fighting weapon has been destroyed.

In this article, the U.S.S. *Mariopolis* typifies all types of naval vessels—carrier, battleship, cruiser, or destroyer. Listen to the story of her birth and early life.

The steps necessary in the construction of a man-of-war present an interesting study. The General Board of the Navy is charged with the duty of recommending to the Secretary of the Navy the number and types of ships and aircraft proper to constitute the fleet, and such building program as may be requisite to be submitted annually to Congress. The General Board is also charged with considering and recommending to the Secretary of the Navy the military characteristics which would be embodied in the designs to be prepared for new ships and aircraft.

The Navy's General Board is composed of top-ranking officers, selected for this duty because of their advanced experience and training in naval matters. The officers on this board are the elder statesmen of the Navy, and frequently number among them several past Commanders in Chief of the Fleet.

This board, basing its recommendations on the known needs of the Navy, recommends to the Secretary of the Navy the number of vessels of each type which should be laid down each year. They also include in their recommendations such important military characteristics as number and size of guns, speed, and steaming radius.

Upon the approval of the recommendations of the board, the Bureau of Ships prepares preliminary plans, approximate data, and estimated cost. For this purpose, this bureau consults the General Board and other bureaus of the Navy Department. The Chief of the Bureau of Ships is designated the Coordinator of Ship Building for the Naval Establishment.

The other bureaus of the Navy Department study the recommendations of the General Board and in coordination prepare details, designs, data, and estimates for those features in which they are interested. The Bureau of Ordnance is responsible for the design, manufacture, procurement, issue, and efficiency of all offensive and defensive arms and armament. The Bureau of Naval Personnel is charged with the procurement, education, training, discipline, and assignment of the officers and enlisted personnel to the ship. The Bureau of Supplies and Accounts is vitally interested in all matters which affect the procurement, storage, preparation, and issue of supplies and equipment including food and fuel. It is also interested in the accounting and disbursing facilities. The Bureau of Medicine and Surgery is responsible for all matters which affect the maintenance of the health of the personnel to be assigned to a vessel, as well as the care of the sick and the wounded. The Bureau of Ships is charged with the design, construction, fitting out of all hulls of vessels including the main propelling machinery, electrical equipment, radio equipment, and many other details. During the preparation of plans, this bureau is required to consult with cognizant bureaus and the General Board regarding details of construction in which they may be interested.

And so, after long preparation and frequent consultations with the General Board and the various bureaus concerned, the final plans and estimates are ready for action by the Secretary of the Navy. When approved by the Secretary of the Navy, authority for obligating money to cover the construction of the vessel is included in an annual appro-

priation bill, or if more immediate action is necessary, a supplemental or deficiency appropriation bill, and cleared through the Bureau of the Budget. After the Bureau of the Budget has approved, the appropriation bill then goes to Congress for enactment. When Congress has enacted the appropriation bill which includes authority to obligate the Government for the full cost of the vessel, and also appropriates sufficient cash to defray the first year's portion of the cost of building, the bill is approved by the President. The Bureau of Ships then proceeds to negotiate a contract, which is let after approval by the Secretary of the Navy. The basic law requires that for each type of combatant ship, every other ship must be built in a Government Navy Yard. The others may be built in private yards. The contract, if awarded to a private yard, specifies the cost of the vessel less the cost of Government-furnished material, and provides for modifications of this cost if and as changes are made in the ship's specifications after the contract is awarded.

Since 1940, there have been certain variations in the above procedure. Congress has included wording in appropriation bills so that any vessel authorized by Congress may be started without returning to the Bureau of the Budget and Congress for the authority to obligate the Treasury. Since all shipbuilding authorizations since 1940 have been on a global tonnage basis, this permits the Navy Department to act in awarding contracts immediately the Secretary approves the construction. Since even the tremendous expansion which has been made in Navy Yards does not enable them to undertake the construction of fifty percent of the combatant ships, that requirement of law has necessarily been disregarded and vessels are allocated to the best yard, private or public, which is qualified to build the type of ship in question and has open facilities. Many contracts are awarded with no price originally included, but with the provision that the price will be negotiated later. Also during this period, in order to protect the interests of inexperienced builders, many contracts for construction of ships have been awarded on the basis of cost plus a fixed fee, where the fee is fixed in advance, and is based on an estimated cost of the vessel. Of course, contracts based on cost plus a percentage of cost are illegal.

Final plans have in the meantime been prepared and carefully checked by the Bureau of Ships, and the contractors are then told to proceed with the construction of the vessel. As soon as a building way is available, the keel is laid, an estimated date of completion is set, and the builders' crew roars into action under the critical eyes of many naval inspectors. Before the ship is ready to take the water, it will require, depending upon its size, thousands of work hours—day and night—thousands of tons of material, and many items of equipment. Slowly the ship takes shape. For some time there is very little in the form of her to suggest that a ship is being constructed, but gradually her outlines appear, and one day it becomes apparent that she will soon be available for launching. Large vessels take several years to build; small ones, several months.

As the vessel rises from her keel, equipment is added as needed. Stores and supplies are accumulated in the warehouses nearby, and her crew is gathered together. Each interested bureau supplies the ship with an allowance list showing the number and type and location of equipment required to be on board, and the necessary spare parts allowed for such equipment. Some of the equipment listed in these allowance lists will be supplied by the building contractor, but the greater portion will be furnished through outside contractors. The Bureau of Naval Personnel has already established a complement of officers and men for the ship. This complement is based on the number of officers and men considered necessary to fight her.

As the vessel proceeds toward completion, the accumulation of equipment and supplies and the gathering of the personnel keeps pace. At first, the vessel is only known by a number, but soon she is the proud possessor of a name. Battleships are named after states, cruisers after cities, destroyers after

heroes, submarines after fish, and aircraft carriers after famous men-of-war and battles.

A launching date is finally set. A sponsor is designated and at long last with great ceremony the ship is released from her earthy cradle. Mrs. A. smashes a bottle of champagne against her bow and says, "I christen thee *Mariopolis*," and the *Mariopolis* takes to the water with a considerable splash of water and champagne.

The tempo of the construction work now increases. The officers having arrived, the enlisted men and officers, if practicable, are quartered together in a receiving station close to the building yard. Every effort is made to form this group of men coming from all parts of the country into a closely knit unit. It will help if arrangements have been made by which the officers and men who may have been naval inspectors during the building of the *Mariopolis* can be assigned to duty on her after she has been commissioned. It is also the custom to supply a cadre of "old timers" from ships already in commission.

The growing ship now receives the interested and critical inspection of the men who are being gathered together to operate her. The executive officer with his assistants organize the crew. Charts showing in detail the assignment of officers and men to stations for battle, fire, collision, abandon ship, operating, cleaning, and upkeep are prepared. These are called in naval parlance "battle, or watch, quarter, and station bills." Officers are assigned staterooms and messes in which they will eat. Enlisted men are assigned to their berths and messes, also. Leading petty officers are assigned to inspection duty on the ship in order that they may become familiar with all of the intricate interior operating details.

As the day of commissioning approaches, it is desirable to assign certain of the officers and the crew to remain permanently on the vessel. Steam is raised, equipment tested, and if possible, certain consumable supplies are placed on board. At last the great day arrives. The crew and officers are assembled aft on the quarter-deck. The Commandant of the Navy Yard or his representative causes the national ensign and the commissioning pennant to be hoisted and turns the U.S.S. *Mariopolis* over to the Commanding Officer. The latter reads his orders to command, assumes charge of the ship, and causes a watch to be set. Our ship has come to life! Supplies pour on board. The crew is exercised at fire, collision, and abandon ship drills until thoroughly proficient. Final tests of all equipment are made.

It is interesting now to take a quick look at the organization of the *Mariopolis*. The Commanding Officer, also known as "the Skipper," "the Captain," "the Old Man," is responsible for the discipline, efficiency, and safety of the ship. Under him and next in seniority to command is the Executive Officer. The Executive Officer is the direct representative of the Commanding Officer in maintaining the military and general efficiency of the ship. He has general charge of the details of duty in connection with the maintenance and operation of the ship in all departments, and especially detailed in connection with the organization, police, inspection, discipline, exercise, and efficient condition of the crew. In the case of carriers, the Commanding Officer, Executive Officer, and Air Officer must be qualified aviators.

Next under the Executive Officer are the heads of the departments. For administrative purposes the ship is organized into a number of departments under the Commanding Officer:

Department	*Head of Department*
Gunnery Dept	Gunnery Officer
Navigators Dept	Navigator
Engineer Dept	Engineer Officer
Construction Dept	1st Lt and Damage Control Officer
Communication Dept	Communication Officer
*Air Dept	Air Officer
Medical Dept	Medical Officer
Supply Dept	Supply Officer

*Carriers only.

Very briefly, the duties of these officers follow: (In small vessels several departments are combined under one head of department. Also, in small vessels, there are no commissioned officers serving as Medical Officer, Dental Officer, or Chaplain.)

The Gunnery Officer assists the Executive Officer in all matters in connection with fire control of the guns and the efficiency of the armament as a whole. He is responsible for the efficiency of the armament and for the cleanliness and good condition of all ammunition stowage places and ordnance workshops, and for the proper stowage and care of all explosives aboard ship.

The Navigator assists the Commanding Officer in all matters in connection with the safe navigation of the ship. He is responsible for the care and good order of the steering gear in general, of all the compartments occupied by the steering machinery, the interior of the conning tower and chart house, navigator's office and store rooms, and all instruments, aids, or apparatus, except electrical, directly or indirectly connected with the navigation of the ship.

The Engineer Officer is responsible for the care, maintenance, and operation of all machinery, including electrical machinery in the ship under the cognizance of the Bureau of Ships, except radio and sound equipment in ships to which Communication Officers are assigned. He is responsible for cleanliness and maintenance of all departments assigned to the Engineering Department, such as fuel tanks, engineer store rooms, engineer work shops, dynamo rooms, engineer living and messing compartments.

The Damage Control Officer and First Lieutenant assists the Executive Officer in all matters in connection with damage control. He is responsible for the cleanliness and good order and neat and trim appearance of the ship as a whole, and of all parts thereof. The Damage Control Officer and First Lieutenant is the Construction Officer of the ship and is head of the Construction Department of the ship. He is responsible for the cleanliness and upkeep of all compartments including equipment therein, except those specified as coming under the supervision of other departments.

The Medical Officer has charge of all material and stores aboard under the supervision of the Bureau of Medicine and Surgery. He is in direct charge of the treatment and care of the sick and wounded and shall advise the commanding officer in regard to matters affecting the physical fitness and health of the personnel of the ship.

Dental Officers shall be assigned to the Medical Department of the ship under the general supervision of the Medical Officer.

The Supply Officer has charge of the pay accounts of the personnel, of the purchasing of stores and material for the ship, and of the disbursement of funds in connection with the general operation of the ship. He has charge of all equipment and supplies, except ammunition, Marine Corps stores, and medical supplies. He has charge of the feeding of the crew and is responsible for the cleanliness and good condition of the galley, bakery, store rooms, and other places under his charge.

The Air Officer, in carriers only, is responsible for all matters pertaining to the maintenance and operation of aircraft on the vessel.

The Communication Officer is responsible for the operation and maintenance of the radio and sound apparatus and of all visual signalling apparatus and equipment, for the compartments and deck spaces occupied by such equipment and apparatus, for the operation and maintenance of all internal communications equipment employed in connection with external communications. The Communication Officer has three assistants: the Radio Officer, the Signal Officer, and the Ship's Secretary. Under the Communication Officer, the three assistants have the following responsibilities:

a. The Radio Officer is responsible for the operation and maintenance of the ship's radio and underwater sound apparatus and communication equipment used in connection therewith.

b. The Signal Officer is responsible for the operation and maintenance of the ship's signalling apparatus and communication equipment used in connection therewith.

c. The Ship's Secretary is responsible for the care and routing of all ship's correspondence and dispatches, for the care and custody of all secret and confidential matter issued to the ship, and for the operation and maintenance of material used therewith.

The Chaplain shall perform divine service aboard ship when prescribed by the Commanding Officer, supervise instruction of those deficient in elementary subjects, form voluntary classes for religious instruction, visit the sick, and shall in case of sickness, death, or other emergencies call on the homes of men whose families reside in the vicinity of the ship. He shall also make such calls on families as he may deem desirable for the development of a sense of interest by the ship in the welfare of the men and their families.

Marine detachments are placed on board certain of the larger vessels. The Marine Officer of a ship shall be attentive to the cleanliness, health, and comfort of his men, and to their instruction, soldier-like appearance, and efficiency. He is responsible for the cleanliness, good order, and efficiency of all equipment and all space on the ship assigned to the Marines, and of such portion of the ship's battery as may have been assigned to the Marines.

In the next echelon below the Executive Officer and heads of the departments come the Division Officers. The crew of a ship is divided into groups of officers and men called divisions. The size of each division will vary with the type of ship and may also vary as between different ships of the same type. Each division is in charge of a Division Officer, who may have a number of junior Division Officers designated to assist him. Each division is assigned a number beginning at number 1. Some are also more commonly known by name, such as the Engineer Division, Navigators Division, etc. Each division is assigned a definite portion of the ship to administer and certain divisions are assigned portions of the ship's battery for battle. The Division Officer is responsible for the care, preservation, and manipulation of the part of the ship assigned to his division, and all material, stores, supplies, and articles of outfits issued to his division. He is also responsible for the cleanliness and efficiency of his part of the ship and the ship's battery. These Division Officers also take turns in standing watch as officer of the deck both when the vessel is under way and when it anchors.

The U.S.S. *Mariopolis* is now complete, although changes will occur as long as she floats. She has her supplies and her crew. She must now acquire proficiency in all matters that are required of a man-of-war. So she is required to go off by herself for an intensive training period called a "shakedown" period. During that period the crew works at top speed, training day and night, learning to operate and fight the ship. After this period of intensive training, the ship returns to a Navy Yard for the correction of defects which have become known during the "shakedown" period. Upon completion of this stay at the Navy Yard the vessel is then required to hold her final trials—during which she is put through her paces, required to steam at all speeds, and to maneuver under excessive overload conditions. If and when these trials are satisfactorily completed, she is sent to sea under sealed orders and proceeds to her designated battle station. Upon arrival at her new station, the *Mariopolis* will come under the critical survey of the crews of all the other ships with whom she is to work. They look her over very carefully. She is a "rookie" ship, and until she can demonstrate her fitness, she will not be taken fully into the company of the veterans of the Fleet. One of the interesting opinions to be formed is whether or not she proves herself a "lucky" ship. A "lucky" ship is one that has no unpleasant accidents. She is always ready and willing for any duty upon which she may be called upon to act. She is lucky. She is efficient. Ships acquire personalities through the operation of their officers and men. Each

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ship is known as a "happy" ship or otherwise; as a "lucky" ship or not.

Eventually the U.S.S. *Mariopolis* will receive her christening in battle, and if she comes through with honor, becomes one of the respected units of the great fleet which flies the flag of freedom, the happy home of her loyal crew, and the adored rival of her skipper's wife!

The opinions or assertions contained in this article are the private ones of the writer and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

Staff Work

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1. Importance.—There is a tendency on the part of many officers to think that when they have presented a problem in general terms to higher authority their full duty has been accomplished. This procedure does not make for effective teamwork. It is the function of higher commanders to make decisions; it is the duty of subordinate officers to present in adequate detail the facts and figures on which these decisions are based, and to carry out the orders resulting from the decisions. If the staff work presented by subordinates is not completed, higher commanders become bogged down in details of procedure. It is a cardinal principle of good management that while a subordinate can and should ask for decisions from higher authority in matters beyond the scope of the subordinate's authority, he should not attempt to "pass the buck" upwards in matters of detail.

2. Procedure.—Completed staff work is the study of a problem and the presentation of a solution by a staff officer, in such form that all that remains to be done by the head of the staff division is to indicate approval or disapproval. A staff officer should never present his solution in piecemeal fashion or bother his chief with long explanations or memoranda. He should resist the impulse to ask his chief what to do; it is his job to advise his chief what ought to be done. The chief needs answers, not questions. It is the responsibility of the staff officer to work out all the details of the problem, no matter how complicated or perplexing they may be, without consulting his chief. He should, however, consult other staff officers.

3. Form.—A staff officer should study, write, restudy, and rewrite until he has found the best possible solution for his problem. This solution may be presented in a rough draft, but a rough draft should not contain half-baked ideas. It must be complete in form and detail, though it need not be as neat as a final draft and is not accompanied by the requisite number of copies. A rough draft should not be used as a means of shifting to the chief the responsibility for formulating final policy or action. In most instances, completed staff work results in a document that is ready for the signature of the chief and without accompanying comment. If the proper solution of a problem has been reached, the chief will usually recognize it at once. If he wants comment or explanation, he will ask for it.

4. Result.—Completed staff work means more work for the staff officer but more freedom for the chief. This is as it should be. The chief is protected from half-formed ideas, voluminous memoranda, and fragmentary oral presentation. On the other hand, the officer who has real ideas to sell can readily present them in his staff work.

5. Test.—When a staff officer thinks he has finished his job he should ask himself whether, if he were the chief, he would be willing to sign the paper he has prepared and to stake his professional reputation on its containing the right solution to the problem. If his answer is in the negative, the paper should be worked over again. It is not yet completed staff work.

A Report on the Army Supply System

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LIKE all activities of the Army, its supply system has grown, in the course of the war, to be really "big business." On 7 December 1941 there were approximately 260 stations and thirty-three supplying depots; now we have some 1,200 stations, 500 of which are active from a supply viewpoint, and over 130 supplying depots. This supply system handles more than 1,000,000 separate and individual items of supply. The foregoing figures do not take into account the large number of Army Air Forces depots or items required to maintain airplanes in combat.

The supply system formerly used by the Army was based largely on local procurement for a great number of the items of supply, together with strict accountability for all supplies thus procured or furnished on a requisition basis. With the increased magnitude of the supply load and the speed necessary to carry this load, changes in the supply system had to be effected in order to handle the supply of the Army in the zone of the interior, to every continent in the world, and to most of the islands dotting its surface. In order to perform this mission effectively, the entire system had to be streamlined, decentralized, and organized to meet all possible contingencies.

While the United States was open to attack, it was necessary that depots be located in depth so that the capture or bombing of any one area would not interfere with uniform supply. At the same time, it was desirable to locate the depots as near the ports of embarkation as possible, to provide for the shortest haul to the port together with a straight-line delivery from manufacturer to the port of embarkation. In order to utilize the principle of decentralization, depots in the zone of the interior have been designated as filler depots close to the ports of embarkation, and master or key depots located in the interior regions. In this way, supplies move directly from manufacturer to the filler depots, if required, or to the master or key depot, and then are forwarded to the filler depots in order to maintain the balance of stocks required. At the same time, provision had to be made for distribution of supplies in the zone of the interior. This was done by the location of regional depots for the supply of given areas. All types of depots are either ASF depots or branch depots, depending on whether or not more than one service or a single service operates therein. The ASF depot principle permits the location of several services in a given area, conserves space, labor, materials handling equipment, and other services. On the other hand, the branch depot can be installed in a smaller space and utilize the technical knowledge of a given community for a particular type of supply.

The only way that this extensive depot system could be operated is by maintaining complete central records at a given stock control point. The speed of modern communication by TWX and the use of the almost superhuman electric accounting machinery permit the chief of service to know at all times what supplies are located in each one of the depots or sections of ASF depots for which he is responsible. This centralization of records and its great flexibility gives information on which to base proper distribution of supplies coming from production, and serves as the basis of an extensive reporting system on which the technical service and the War Department can base future plans.

In order to speed up operations in the zone of the interior, requisitions are now processed from the organization requiring the supplies directly to the station on which that organization is based for supply; in turn, the station secures resupply from its distribution depot by placing requisitions periodically on that depot. The processing of requisitions is thus a straight line and the flow of supplies is directly opposite to the flow of papers. Because the chief of a technical service is responsible for operating the depots and for maintaining adequate stocks at stations, this method of furnishing supplies has been called "The Direct System of Supply."

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Stock control of station and depot stocks is in full operation in the zone of the interior. This control visualizes the establishment of station control levels to take into account the reserve needed to meet fluctuating demands, the working stock required for day-to-day operation, and the lead time required to secure supplies from a depot. From the computations so made, requisitions are submitted for replacement of actual issues. Stations take into account what is "On Hand," and what is "Due In," in considering their overall stock position. Any excesses to a station's needs are thus quickly developed and necessary reports are made to the supplying depot, so that the stocks available for issue can be picked up on the depot records and reflected by EAM equipment as available to the chief of technical service.

Excesses at any echelon are caused by changes in plans, changes in troop strength, failure of a lend-lease nation to accept supplies once produced, and many other reasons. To make plans to keep excesses at a minimum is the goal; to keep excesses on hand is wrong. It takes personnel to handle the supplies and records and to maintain them. Space badly needed for current operations is required for storage. The items might be useful in civilian economy. Supply personnel, therefore, are judged on their ability to have on hand supplies when needed and to determine and get rid of any overstocks.

For overseas requisitions, the ports of embarkation are the funnel through which all information on supplies flows. Requisitions from overseas are therefore placed on the port of embarkation responsible for the supply of that theater. Once a requisition comes to the port of embarkation, it is extracted to the filler depot responsible for the supply of that commodity, and the overseas theater is informed of the action taken by the port to furnish the material, to adjust the quantity to be supplied, to put the material on back order, or to delete it in its entirety because it is no longer being produced. In this way, the overseas theater is kept informed at all times of the situation concerning every item of supply. The requisition is forwarded in time to permit the filler depot to make supply within a given time limit. If, for any reason, the supplies are not available at the filler depot, they are extracted to the stock control point of the particular technical service concerned. The need for centralized records can now be seen because the stock control point has full knowledge of the supply situation in all depots of the country and can extract to another depot for those supplies unavailable at the filler. Ordinarily, the time limit is such that these extracts can be placed on a secondary source of supply so that the items can be moved to the port of embarkation in time to meet the deadline.

For newly mounted task forces, it has been customary to furnish an automatic shipment of supplies to keep the task force in operation during the early stages of combat. These shipments are computed according to the best information available to the chief of technical service. Shipment is made on an increment basis to provide the minimum essentials without initiation of action by task force personnel. Because this method of supply unbalances stocks to an alarming degree it is desirable to have requisitions submitted on an item basis as soon as the necessary information can be assembled. Only in this way can we prevent complete exhaustion of certain categories and a superabundance in others.

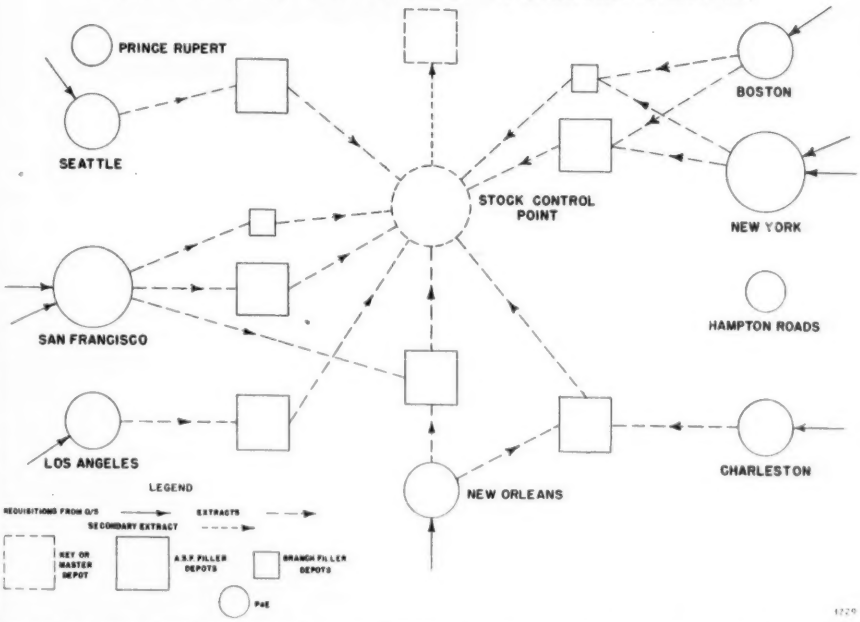
Overseas commanders have the responsibility of distributing supplies within the theater and of establishing the necessary records and procedures to maintain stocks on hand in accordance with prescribed War Department levels. They also have the duty of taking advantage of all local resources available. This is an advantage to the over-all supply system because it maintains the economy in an overseas area, the requirement for shipping is materially lightened, and the need for stripping our own resources is lessened. In the Pacific Areas, the exchange of lend-lease and reverse lend-lease service has definitely been on the debit side as far as the United States is concerned.

Holding and Reconsignment Points have been built on the main lines of railroads lead-

ing to ports of embarkation, to act as surge tanks in the event the flow of supplies to the port becomes so great they cannot be handled. These points were installed as a result of the experience in the last war when all rail lines from Pittsburgh to New York were so

ing has been vitalized to bring it up to date. Formerly, stock record cards were designed to serve as a vehicle for auditing purposes. Now, stock record cards are used primarily for the purpose of ordering supplies, and secondarily for accounting. The adjustment pro-

SCHEMATIC DIAGRAM
FOR FURNISHING A.S.F SUPPLIES TO OVERSEA THEATERS.



THE OUTLINE ABOVE REPRESENTS THE FLOW OF REQUISITIONS, EXTRACTS, SHIPPING INSTRUCTIONS, AND OTHER PAPERS. THE STOCK CONTROL POINT REPRESENTS THE CLEARING HOUSE FOR INFORMATION. ALL DEPOTS SEND SUPPLIES DIRECTLY TO THE APPROPRIATE PoE WHERE NECESSARY FOLLOW-UP IS MAINTAINED AND SUPPLIES ARE LOADED FOR SHIPMENT IN ACCORDANCE WITH THE PRIORITY FURNISHED BY THE THEATER.

clogged with loaded freight cars that movement through the port was practically impossible. Now, however, a system of releases has been developed so that depots hold supplies packed and marked until such time as the port calls them forward. In this way, the ports have been able to maintain a working backlog of freight to be handled without congesting port facilities.

All of the above methods for expediting supply would not have been possible except for the fact that the old method of accountcedure, when discrepancies exist, has been made easier. Vouchers no longer have to be matched in the fiscal office of the service command. The number of documents required has been minimized by the utilization of the War Department Shipping Document, and procedures for receiving and issuing supplies have, in all cases, been improved. Thus, in the month of October 1944, 4,306,000 measurement tons of supplies were shipped through the respective ports of embarkation to overseas commands. This amount could

have been materially increased had there been additional ships available for transportation. At the same time, 700,000 weight tons of supplies were moved to zone-of-the-interior installations and all of this occurred while 2,350,000 weight tons were being received in the depots from new production or returned stock.

The flexibility of the Army supply system is its greatest asset. The ports of embarkation have available the necessary records so that if a ship is sunk due to enemy or natural causes, necessary machinery can be put into operation to cause a resupply of the lost equipment. Overnight changes in shipping requirements sometimes make it necessary to divert supplies consigned to one port by a technical service depot to another port. Units have been equipped with a minimum of work by making automatic shipment on directives issued by the chiefs of technical services. It is possible to control the issue of critical items of equipment on a percentage basis so that units will secure the amount required for training when needed and secure complete allowance of equipment on departure overseas or into combat. By centralizing the planning actions on depot missions, it is possible to utilize the facilities of all technical services to the advantage of the system as a whole.

The production story is another problem which has been covered extensively elsewhere. The achievement reached in distributing the supplies produced has been equally great, and has resulted in a uniformly well-supplied Army on all fighting fronts.

Supply-Dropping in Yugoslavia

From a British source.

ONE of the war's most remarkable feats of supply-dropping from the air, and at the same time one of the heaviest blows to the Germans retreating in the Balkans, has been achieved by the Royal Air Force. The supplies were for Marshal Tito's army in Yugoslavia—the greatest quantity ever dropped in the Mediterranean zone in a forty-eight hour period: 660 tons delivered by 500 aircraft. Heavy and medium bombers of an RAF group, placed at the disposal of the Balkan Air Force, contributed nearly 400 sorties to their total.

The most important aspect of the operation was its tactical timeliness, for it reinforced those Partisans who are in the path of the Germans trapped or almost trapped in Yugoslavia and anxious above all else to keep their line of retreat open.

The supply dropping was also coordinated with RAF air attacks. The RAF bomber group made two trips to the Sarajevo rail yards on the enemy's only rail escape line to the north during the forty-eight hours of the supply dropping. Thus they were hitting out themselves as well as helping Tito's men to strike.

The drops began in daylight, and the supply planes went down low, some to 300 feet—a dangerous business when flying among hills—to insure accuracy. There was no Luftwaffe opposition, but some flak. All the aircraft returned to base before dark, and then began at once to refuel and reload before taking off again to make more drops during the night. Among the stony hills and water-logged valleys at prearranged places the Partisans had started bonfires in agreed patterns, as a guide to the fliers.

By midday the next day the ground crews at the air bases had hung another load of containers on the aircraft. In daylight the air crews could see heaps of collected containers on the ground below in lanes ready for transport to pick them up and take them to the Tito fighters.

Communication between Marshal Tito's forces and the Allied authorities is now so well established that, after each supply dropping mission, the RAF in Italy receives messages describing how the containers fell and the key phrase in these reports is: "Drops very successful."

Property Rights and Restrictions Overseas

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THE occupation by United States forces of enemy homelands—Germany and Japan—as in Italy, creates complex and difficult problems of property rights and restrictions under the rules and usages of international law not generally appreciated or even realized by many Army officers. Many of these problems are handled usually by civil affairs and engineer staff officers for theater commanders.

Just what are our obligations and property rights under the rules and usages of international law? The United States and Great Britain are signatories to certain well-established written regulations regarding the conduct of war known as the rules or laws of war. Field Manual 27-10, *Rules of Land Warfare*, contains the official English text or translation of every treaty provision obligatory upon the United States bearing upon the conduct of our forces in the field. Those dealing with property are largely based upon the Hague Convention IV of 1907 and known as the Hague Rules.

The general rule is that in war a belligerent may destroy or seize all property of whatever nature, public and private, hostile or neutral, unless such property is specifically protected by some definitive law of war, provided such destruction or seizure is imperatively demanded by the necessities of war.*

Now for the restrictions. Concerning "Public Property," H. R. (Hague Rules), Article 55, entitled "Real Property of a State," says: "The occupying State shall be regarded only as administrator and usufructuary [having the right of using] of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties, and administer them in accordance with the rules of usufruct." In other words, the occupant may enjoy the fruits of enemy real property for the duration of the conflict. However, the occupant does not have the right of disposal or sale of such enemy property. As administrator and usufructuary he should not exercise his rights in such a wasteful and negligent manner as seriously to impair its value.

Real property of a State, susceptible of direct military use, is in still another category. Forts, arsenals, dockyards, magazines, barracks, railways, canals, bridges, piers and wharves, and other similar State real properties remain in the hands of the occupant until the close of the war, and may be destroyed, if deemed necessary, in military operations. We might add "if deemed desirable" as well as necessary in order to prevent its falling into the hands of the original owners, the enemy State, and being used against our forces.

The same freedom with respect to enemy State-owned property does not exist in connection with the property of municipalities, etc. H.R., Article 56, says, "The property of municipalities, that of institutions dedicated to religion, charity, and education, the arts and sciences, even when State property, shall be treated as private property. All seizure of, destruction, or wilful damage done to institutions of this character, historic monuments, works of art and science, is forbidden, and should be made the subject of legal proceedings."

However, the property included in the foregoing rule may be utilized in case of necessity for quartering troops, the sick and wounded, supplies, etc., and generally as prescribed for private property. Such property must, in the event utilized, be secured against all avoidable injury even when located in fortified places which are subject to seizure or bombardment. Article 46 states in paragraph 1, "Private property . . . must be respected," and in paragraph 2, "Private property cannot be confiscated."

What about this "scorched earth" policy and widespread devastation in this connection that we have been reading about in the news-

*See paragraphs 313-344 inclusive, FM 27-10, for detailed rules regarding property.

papers? The measure of permissible devastation is found in the strict necessities of war. As an end in itself or as a separate measure of war, devastation is not sanctioned by the law of war. There must be some reasonably close connection between the destruction of property and the overcoming of the enemy's army. Thus the rule requiring respect for private property is not violated through damage resulting from operations, movements, or combats of the army: that is, real estate may be utilized for marches, camp sites, and construction of trenches and fortifications. Buildings may be used for shelter of troops, for the sick and wounded, for animals, for reconnaissance, for defensive cover, etc. Fences, woods, crops, buildings, etc., may be demolished, cut down, or removed to clear a field of fire, to construct bridges, or to furnish fuel if imperatively needed for the army. The American rule with respect to private property does not interfere with the right of the victorious invader to tax the people or their property, to levy forced loans, to billet soldiers, or to appropriate property, especially houses, boats or ships, and lands, for temporary and military use. However, H.R., Article 47, says in this connection, "Pillage is formally forbidden." All captured matériel and booty belong primarily to the government of the captor, according to the modern law of war. Neither officers nor soldiers are allowed to make use of their position or power in the hostile country for private gain, not even for commercial transactions otherwise legitimate.

"Private property can be seized only by way of military necessity for the support or other benefit of the army or of the occupant. All destruction of property not commanded by the authorized officer, all pillage or sacking, even after taking a town or place by assault, are prohibited under the penalty of death or such other severe punishment as may seem adequate to the gravity of the offense." These statements from paragraph 330 of FM 27-10 would seem to be adequate as a basis for disciplinary action being applied to any violations thereof.

A further amplification of the foregoing paragraph applying to private property susceptible of direct military use is made by H.R., Article 53, paragraph 2, which states, "All appliances . . . adapted for the transmission of news, or for the transport of persons or things, exclusive of cases governed by naval law, depots of arms, and, generally, all kinds of ammunition of war, may be seized, even if they belong to private individuals, but must be restored and compensation fixed when peace is made." The foregoing rule applies to everything susceptible of direct military use such as cables, telephone and telegraph plants, horses and other draft and riding animals, motors, bicycles, motorcycles, carts, wagons, carriages, railways, railway plants, tramways, ships in port, all manner of craft in canals and rivers, balloons, airships, airplanes, depots of arms whether military or sporting, and, in general, all kinds of war matériel. The destruction of such property and all damage to the same is justifiable if it is required by the exigencies of the war. From the foregoing we can well imagine how our army in Italy is obtaining mules and jackasses and other necessary means of transport for the mountainous terrain over which it is operating.

The foregoing citations from the Hague Rules and American interpretations thereof taken from the "Rules of Land Warfare," which are binding upon our theater commanders, give the necessary background and explanations of "the rules and usages of international law" from which to view the current War Department oversea real estate policy, and the responsibilities outlined therein. These responsibilities are stated as follows: "Oversea commanders reporting direct to the War Department are responsible for all matters connected with real estate in their respective areas unless specifically instructed otherwise by the War Department. . . . Contracts pertaining to real estate, and leases, including modifications thereof, executed by these commanders or their properly designated representatives do not require War Department approval."

The War Department will make available, upon request of oversea commanders, quali-

fied real estate officers by assignment for this purpose.

The items covered under the expression "unless specifically instructed otherwise by the War Department" are interesting and so clearly stated that no additional comment is needed. The first one is: "No real estate will be acquired in fee by United States Army forces without prior approval of the War Department." In connection with the next item, "In those countries where reverse lend-lease is in effect, full advantage will be taken of such arrangements in making a reasonable compensation for the occupation by United States forces of private property," it should be explained that these arrangements are usually coordinated through the Theater General Purchasing Agent or similar central procurement agency, if not actually handled by such an office through negotiations with foreign government representatives. To continue, "In those countries where no such lend-lease provision is in effect, reasonable compensation will be paid for such occupation; *provided* that, payment for occupation of lands in such countries will not be made to any person or persons who are of enemy nationality or who are hostile to the interests of the United States, except as the Theater Commander or his designee shall determine that such payment is to the best interests of the United States. In liberated United Nations countries, compensation or rents for use of property will not be paid in the zone of combat when such property has been vacated on account of existing or imminent military combat."

Then we have the following restriction: "Pending further instructions, compensation for use of property located in enemy countries will be in accordance with the rules and usages of international law, as recognized by the United States." In the foregoing, the door is left open for the future. Otherwise, the Hague Rules previously discussed shall prevail.

In the occupation of Sicily, incidentally one of the first under Allied Military Government (AMG), Article 3 of Proclamation No. 1 read: "Your existing personal and property rights will be fully respected . . ." This publicly indicated in one of our first occupations of enemy territory in this war our (and Great Britain's) policy with respect to private property rights.

An historical account of real estate activities in the "X" Army during an island campaign completed in the same theater of war indicates that a directive published prior to the operation, and citing FM 27-10, provided for the acquisition of real estate by the unit desiring the property, to be followed immediately by a requisition from the unit concerned, subject to the following conditions: (a) no property of the enemy State will be purchased or paid for; (b) where the ownership of property is unknown, or doubt exists as to whether it is public or private, it shall be treated as public property until ownership is definitely settled; and (c) property of municipalities, etc., as above quoted from FM 27-10, H.R., Article 56, shall be treated as private property. Rentals and compensation were to be left open for determination by G-4 of the task force if immediate occupancy and urgent necessity existed. A detailed report, as complete as possible, designed to protect the United States from any unjust claims arising from the occupancy of all real estate, grounds as well as buildings, was required to be submitted through channels to army headquarters as soon as possible after occupancy of any real estate. Notification in advance of the date any property was to be vacated was also required. The only buildings to be acquired were for storage of supplies liable to deteriorate by exposure to the elements, and for field and evacuation hospital needs, and were not to be requisitioned for billeting of troops, as initial accommodations for them were tented. In order that all records of property could be kept in a central office, the army engineer assumed this function. This control office requisitioned all property required by army units in the headquarters area and acted as a clearing house for all requests of subordinate units.

Here we have established a basis for control of real estate even in the combat zone.

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An effort was made to collect sufficiently detailed records to assist in settling up fiscal records if and when payments were to be made, and to provide the necessary data for a probable claims commission in order to facilitate adjustments of claims. Over 200 requisitions were completed and about 150 requests were being recorded when the base section (communications zone) group took over. What a tremendous help those records must have been to the officers responsible for establishing a basis for payment for private property when the period covered by the zone of combat ended. However, many difficulties were encountered due to (1) lack of available public records, (2) looting of public and private property by civilians prior to the occupation by Allied forces, and (3) lack of cooperation of unit commanders in supervising the taking of inventories. These will be the usual and expected difficulties in any area, such as a large city, which has been subjected to heavy bombing and to devastation by retiring Axis forces that realize the importance of public and property records and the difficulties caused by the lack thereof.

In order partially to explain why the large number of requests and requisitions for property were made in spite of the limitations imposed, an examination of the "X" Army construction policy under the heading of "Shelter" reveals that "all existing structures will be utilized to the fullest extent initially." Also, that latrines, kitchens, and bath facilities for troops would only be constructed when the situation became stabilized enough to permit, and such service installations as require housing "will be constructed only after maximum use of existing structures has been made." All of which indicates a definite understanding of the legal rights of a belligerent occupant with respect to property as well as the restrictions and obligations on the use of private property. A lack of such understanding would create many unnecessary difficulties and an overwhelming number of justifiable claims with their accompanying costs of settlement, whereas adequate accommodations might well have been found in public property of the enemy State.

In another invasion operation, the policy covering the initial operations in the metropolitan city area stated that instructions issued by AMG authorizing use of property, premises, etc., should be recognized by troops, that there should be no interference with such instructions, and no attempts should be made to requisition property which had already come under the orders of the AMG. Also, that acquisition of rights in real estate, except for the foregoing, should be the responsibility of the appropriate base area commander within the zone of territorial responsibility of his base area. The policy also provided for the centralization of demands therefor and presentation of them to the base area engineer as the only authority authorized to requisition real estate for United States forces. Requisitioning priorities were established in the following order: (1) vacant buildings, (2) public buildings, (3) hotels and commercial establishments, (4) schools and institutions, and (5) private homes. Prohibitions were put on requisitioning of churches and other places of worship and private cultivated premises. Informal receipts were to be given for real estate requisitioned—these being required by H.R., Article 52. The procedure with respect to payments was that none was to be made pending announcement of policy.

Soon after the base area was separated from army control and became part of the communications zone organization, an order was issued covering "Protection of Private Property," stating that it would not be secured or used without prior clearance through proper channels.

This served to emphasize that the "Rules of Land Warfare" with regard to respect for private property were being followed and indicated that maximum use would be made of vacant and public buildings. All of the large headquarters establishments were actually set up in enemy State-owned property such as the Customs House, Finance Building, and Royal Palace buildings. All of these procedures would tend to avoid subsequent claims for the acquisition and use of, and damage to, private property.

Breaches in Mine Fields

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Instructor, Command and General Staff School

IN numerous reports sent back from the theaters of operations, mention is made of the paralyzing effect upon the individual soldier once mines are known to be present in an area. As a result, extensive training is being given all arms and services to create a knowledge of all types of enemy mines, how to locate and disarm them, as well as the technique and methods employed in breaching mine fields.

The location of a mine field may be detected from aerial photographs or alert ground reconnaissance, but sometimes, unfortunately, it is not discovered until a vehicle comes in contact with a mine. It then becomes necessary to determine the length and depth of the mine field and its composition as to type of mines, both antitank and antipersonnel, before an attack can be made through it. Engineer and/or specially trained mine-field reconnaissance parties will be employed actively along the entire front to obtain quickly a clear picture of the trace and pattern of the enemy mine field. Such reconnaissance will normally be made at night to preserve secrecy and escape enemy fire.

The mine-field reconnaissance party consists of one officer and six enlisted men. Each party will move from a starting point near the front of the mine field and proceed along a given azimuth into and through the mine field (see Figure 1). Mine detectors will be employed if they are available and the area will permit their use; but if the detectors are not available or the ground is shrapnel-covered or the soil content will not permit their use, the No. 1 man of the party will prod a four-foot path locating trip wires and mines. As the party moves through the mine field a tape and a cord are unreeled and pinned along the ground, and on the tape knots are tied to record the location and type of all investigated trip wires and mines. The officer disarms all mines and replaces and recamouflages each carefully. The cord is left in place to mark for later use a safe

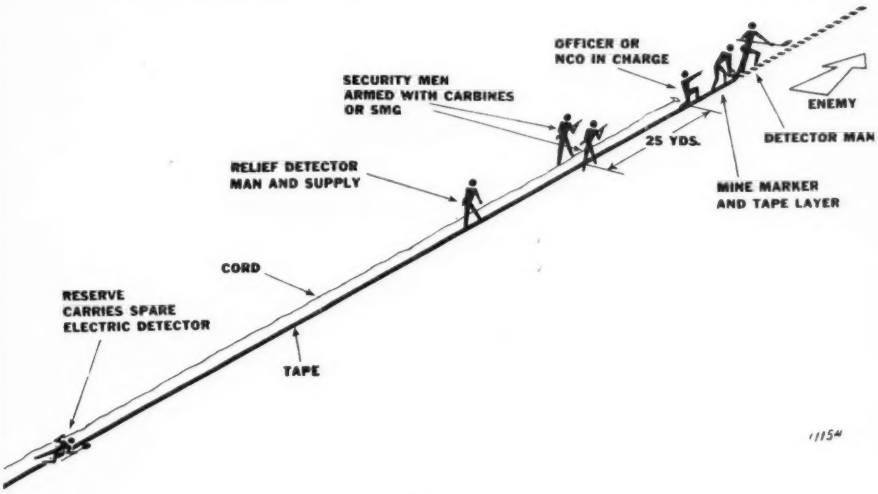

FIGURE 1.
MINE-FIELD RECONNAISSANCE PARTY.

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path through the field. The record tape is carried back to the rear area and the information on it is transferred by plotting on a sketch of the area. When several of these are examined and incorporated on a sketch of the mine-field area, they provide information for the attack. The greater the number of reconnaissance tapes the more accurate will be the plotting, and the breaching plans can be organized more effectively. Important to the success of the assault is the fact that the plans must be based on current reconnaissance. There is always the possibility of the enemy discovering indications of our efforts which will lead him to make changes within the mine field.

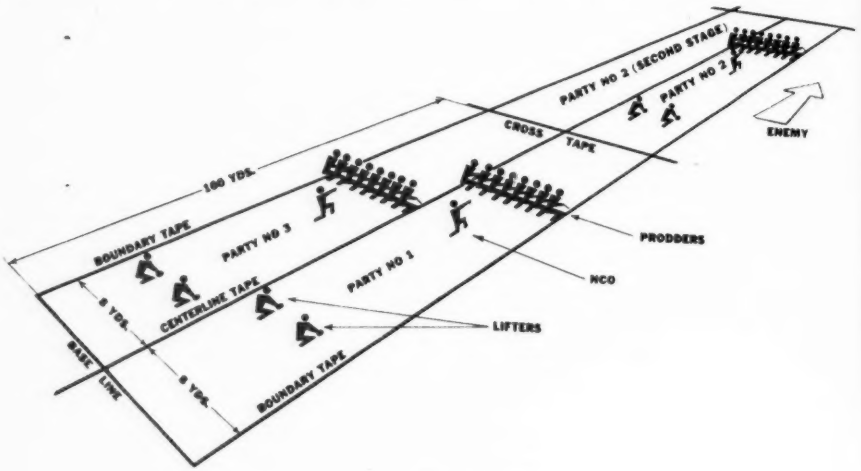

FIGURE 2.
MINE-LANE BREACHING PARTIES.

The assault and breaching of a mine field resembles an opposed river-crossing operation. An infantry force is infiltrated through the mine field along narrow cleared paths to establish a bridgehead on the enemy side of sufficient depth to cover engineer troops who clear the lanes which allow supporting vehicles to pass through the mine field. Infantry must be trained and accustomed to clearing and marking paths through mine fields using whatever means is available. Assistance may be had from certain mechanical devices or explosives, but it may be necessary to use specially trained infantry personnel employing detector or prodding methods. These path-clearing parties will operate under cover of darkness, starting at such time as will allow the bridgehead force to pass through and establish the bridgehead by daylight. At least one footpath per assaulting company is cleared and taped. Since the enemy maintains close observation of his mine fields and covers them with fire, it will seldom be possible to clear vehicle lanes without opposition; therefore, full use is made of darkness, smoke, and heavy artillery concentrations. Vehicle lanes through the mine field must be opened up rapidly so the infantry bridgehead may be reinforced with antitank guns and other supporting weapons. The task of clearing, marking, and maintaining those vehicle lanes will employ fully all available engineer troops, and for that reason the number of lanes should be kept to the minimum, probably one per assaulting battalion front. The infantry force as it moves forward must "mop up" within the perimeter of the bridgehead. Experience has shown that

the danger of enemy infiltration or counter-attack makes mandatory the location of a small infantry protective detachment at the enemy end of each vehicle lane.

The first objective of the engineers is to open lanes eight yards wide through the mine field as rapidly as possible and then to widen them to sixteen yards. In clearing the lanes mechanical means, explosives, detectors, or prodding may be employed. Breaching a sixteen-yard lane using detectors or prodding is a platoon task. A centerline tape is laid down after clearing a path for it, then the base line and right boundary of the lane are cleared and taped (see Figure 2). If necessary to clear by hand, eight men on hands and knees align themselves along the base line, feel for wires, prod an area one yard wide and about one foot in depth, and move forward as directed by the noncommissioned officer. When wires or mines are located they are marked by the "prodders." All antipersonnel mines are disarmed at the time they are located. Following immediately behind the "prodders," the "lifters" disarm all antitank mines, trace and remove all wires, and lift and carry all mines to the rear, where they are placed in a marked and fenced area aside from the vehicle lane. Other cross tapes may be placed across the lane and additional breaching parties start from them and work simultaneously, thereby speeding up the operation. As soon as the field has been cleared by the breaching parties a "test" vehicle is passed across the mine-field lane. Controlled traffic may then ultilize the eight-yard lane. The breaching parties then tape and clear the adjacent or left half to widen it into a sixteen-yard lane. With casualties anticipated, this work to be thorough is exhausting and tedious, and reserve breaching parties must be planned for and utilized.

Once the full-width lane is cleared, painted and luminous markers are placed fifty yards apart in front of and converging toward the entrance to each lane and continuing across the mine field. The rear mine-field boundary is fenced with barbed wire and white tape for one hundred yards on each side of the lane. An engineer squad remains to maintain markers and fences and to improve the lane, and assist in the recovery of vehicles which might become disabled within the lane.

If the mine field is to be passed through later by a complete armored force to exploit success, it usually will necessitate the clearing of additional lanes because those originally made for the infantry bridgehead force will be filled with supply traffic for the bridgehead troops.

Remember that the outfit that gets there first and does the most damage to the enemy is the outfit that knows its preventive maintenance. Preventive maintenance isn't just taking care of the things that show. It is taking care of fundamentals. Proper oil and proper lubrication at the right time and the right place with the right lubricants. Replacing a worn or broken part before it breaks down at a crucial time. Running mechanized equipment as though it were a personal possession and must be personally paid for—a pride of ownership that keeps every piece of equipment in tip-top shape at all times—all these are preventive maintenance. Preventive maintenance is checking everything from clothing to guns and trucks constantly so that they are ready for hard use instantly. Remember that if you take care of your equipment, it will take care of you.

—Maintenance Division, ASF

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Surgical Teams--World War II

THE MILITARY REVIEW for May 1944 contained an article entitled "Notes on the Medical Service during the Italian Campaign," a digest of which appeared in *The Bulletin of the U. S. Army Medical Department* for August 1944. The article was compiled by Colonel Henry P. Carter, Senior Medical Instructor at the Command and General Staff School, Fort Leavenworth, Kansas, from reports submitted by United States Army observers.

Colonel Carter recently received an interesting letter from Captain Floyd D. Taylor, MC, now on duty in France, in which Captain Taylor stated that, as head of an auxiliary surgical team group, he felt that the reports had not done justice to the group, and offered the following comments:

"A surgical team is made up of three medical officers, a nurse, and two enlisted technicians, and every team is headed by a medical officer who has had a surgical residency lasting from three to eight years. Many of them are members of the surgical boards of well-known hospitals.

"Only during the Tunisian campaign did we work in clearing stations, there being no field hospitals in Africa at that time. We have never been attached to a clearing station 'for diagnosis only,' as stated by your observer.

"We work here in field hospitals *set up next to clearing stations*, only a few miles from the front lines. Both the clearing station and the field hospital (unit) try to move often enough to stay quite close up, thus reducing the 'time-lag' between the front area to real, early surgical treatments. With three platoons (units) of the field hospitals thus reinforced with surgical teams, we are able to 'leap-frog' and keep up with the clearing station during an advance of the division.

"We do not do 'too much surgery too far forward,' as stated in the staff report from Africa, but we do priority cases that include bad abdominal, chest, extremity, and severely shocked cases—the so-called 'non-transportable' cases. This procedure is approved by Headquarters Fifth Army.

"This is our twenty-third month overseas, and we have made every invasion including Africa, Sicily, Salerno, and Anzio, and lastly southern France. We have always landed on D-day, doing all major surgery the first few days, and we have had several of our unit killed, about thirty percent wounded.

"We would like to have just one article putting everyone straight about our unit, as it was the first of its kind, and we feel that we have done a fine job. We don't like to see it underrated."

Colonel Carter agrees that this surgical group has done magnificent work during the present conflict, and wishes to correct any false impression created by the staff reports. As evidence of the important work these teams are performing, further staff reports are quoted as follows:

"Platoon, Field Hospital No. 33, handled 297 casualties (non-transportables) with an operative mortality of 18.8 percent, which indicates the severity of this type of cases."

"The 2d Platoon, Field Hospital, located near San Pietro, Italy, adjacent to the —— Clearing Station, operated on ninety-six casualties during the period. Thirty-two cases died (thirty-five percent), as the 'time-lag' from battle area to surgery was too great."

"Everyone I met was wholeheartedly in favor of the practice of reinforcing the clearing company of infantry divisions with a field hospital platoon (unit), the latter reinforced with an adequate number of auxiliary surgical teams, which took over those cases too ill to travel farther—the chests, abdomen, fractured femurs, and badly shocked cases. About eighty percent of these cases required whole blood."

Unquestionably, the surgical teams operating up in division areas are proving their worth as life-saving units in taking care of these very dangerously wounded American soldiers.

Staff Planning for an Airlanding Operation

MAJOR EARL BISHOP, *Infantry*
Instructor, Command and General Staff School

"HE floats through the air with the greatest of ease" will be whistled by many ordinary "doughfoots" in this war and they won't be thinking about that man on the flying trapeze, either. They'll be thinking about themselves and their buddies as they are carried by plane or glider into combat. These whistling infantrymen, artillerymen, engineers, and others—ground soldiers all—are the pioneers in a new and brilliant method of getting there "fustest with the mostest." That method is to transport men, equipment, armament, and supplies to an objective area by plane or glider and to evacuate personnel by the same transportation. If we are to expect the greatest critics of any staff officer—the men in the ranks—to believe they are floating through the air with the greatest of ease, then there must be detailed, complete, and intelligent staff planning behind one of these airlanding operations. Let us discuss such a type of operation and see what the staff officer of an infantry division is faced with should his unit be participating.

The point for everyone to remember is that once this air-transported division has been carried to its objective and has been reassembled on the ground it will fight as in any ground operation. Generally speaking, the problems then are like those confronting any ground staff officer. It is the planning, rehearsing, and conduct of the air movement phase, and the resupply for the ground operation that brings up new and difficult problems—ones that must be solved to insure a successful operation. We will attempt to cover some of these problems and discuss a solution to each one.

What missions can we expect to find airlanding units employed upon? An answer to this will form the foundation for planning. Ordinarily, we can expect airlanding units to be used to *reinforce* airborne units or other ground units. They also can be employed on independent missions to land deep in the enemy's rear to operate against his communication lines and installations. These types of employment bring up many questions to the average observer which can be quickly answered. First, what is the difference between airlanding troops and airborne troops? Airborne troops are specially organized, trained, and equipped troops that utilize air transportation for entry into combat. They are our parachute units or our airborne divisions who train specifically for operations that require a vertical striking force to assist the main effort. On the other hand, airlanding units are ordinary ground units that have been stripped of heavy equipment and nonessential personnel, taught to load the remaining personnel and equipment in planes or gliders, and carried to the objective by this air transportation.

The second question may be, "Why are they ordinarily used to *reinforce* other units?" They are ideally suited to reinforce airborne units because they can carry heavier equipment, transportation, and bigger weapons in the planes so that airlanding units have greater shock action and staying power. Also, they have greater strategic mobility than other ground troops—they have the same strategic mobility as airborne troops—so they can quickly support an airborne force or other ground forces. Then too, an airlanding unit will usually require airborne forces or other ground forces to go in initially to secure landing fields or strips for the successful landing of the transport planes to disembark the air-transported men and supplies. This securing of the landing area is very important to the success of an airlanding operation if any enemy opposition is expected. The airlanding unit must be free of enemy interference for sufficient time to build up its force of men, equipment, and supplies to the necessary amount to accomplish the mission. This time will vary, dependent upon the planes available, distance from the departure bases, the size of the unit, and the landing areas available. If an initial airborne or ground unit is not available to secure the landing area or if the airlanding force is on

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an independent mission, then the landing areas selected must be far enough away from the enemy's disposition so that he is incapable of reacting in time to prevent the build-up.

Once the mission has been assigned the "airlanding" division, the commanding general and staff must study as many of the

FIGURE 1.
AN ARMORED JEEP.

items listed below as may be applicable to the situation. In some cases, final decisions must be made in agreement with the troop carrier commander. These items are as follows:

a. Stripping the unit of heavy equipment, etc., so that it may be transported by air.

b. Composition of airlanding force; based upon estimated opposition, the mission, and availability of supporting aircraft.

c. Selection of terrain and facilities for rehearsals of the operation. That part pertaining to air operations to be finally decided in conjunction with the troop carrier commander.

d. Preparation of a tactical plan.

e. Coordination with other ground forces.

f. Photo coverage and information of enemy required for planning.

g. Equipment required, such as sand tables, briefing facilities, and the like, for orientation and for rehearsal of missions.

h. Tentative selection of landing areas; to be decided finally in conjunction with the troop carrier commander.

i. Tentative assignment of airlanding troops to departure airfields; to be decided finally in conjunction with the troop carrier commander.

j. Time schedules at departure airfields, to include arrival of troops, and loading of equipment and personnel.

k. Communications at departure airfields, and for the operation. The latter will include air-ground communication related to supply, reinforcement, and evacuation; to be decided finally in conjunction with the troop carrier commander.

l. Arrangements for supply, resupply, and evacuation.

m. Handling of prisoners of war and of civilian population.

The above items form a partial check list for the staff officers of an infantry division participating in an airlanding operation. Some items will not apply to every operation but all those listed are important and every staff officer should be familiar with the ones that pertain to his respective section.

Probably the first problem that G-3 must coordinate is the stripping of the division of heavy transportation, equipment, and nonessential personnel so that the remainder may be air transported. This work may have been performed well before an operation so the troops and units could practice with their new setup. Some items of heavy equipment will be replaced by lighter items so as not to lose too much fire power or mobility. For example, all the jeeps of the division may be reshuffled to replace the heavier trucks. The 105-mm howitzer M3 or the 75-mm pack howitzer can replace the light and medium artillery pieces of the division artillery. The medical battalion can construct jeep ambulances to replace the heavier type. The engineer battalion may be able to secure some airborne aviation engineer equipment, and the reconnaissance troop must depend on motorcycles and "armored" jeeps (see Figure 1).

This is only a small list of the many tasks required to reshuffle the division equipment, and no exact formula can be given. The best combination will vary with the mission, planes available, imagination and initiative of the leaders, and other factors.

As soon as the division has been reequipped, sufficient time should be available to allow all units to try out their new formations and equipment. In many instances, units will be operating with reduced personnel or substitute equipment, so it is imperative that practice and rehearsals be held to acquaint everyone with his new role as an air-transported fighter.

When the mission is assigned the division, one of the first recommendations that G-3 will submit is the composition of force. What units will go forward and who will stay behind? What combination of forces will go in each air lift? (As used in this article, a "lift" is defined as all the planes that leave the departure area and fly to the objective area at as near the same time as is consistent with formation technique.) These are the main questions to be answered. Normally, only those units that are initially essential to the success of the operation will go forward, since it is not desirable to use badly needed planes for transporting units that could function better in rear areas. Such units may be rear echelon division headquarters, ordnance company, quartermaster company, and portions of other units. Some units must stay behind to see that a steady flow of supplies is sent forward and that everyone and everything evacuated to the rear is properly handled.

As for the combination of forces to go forward, the usual method is to keep major units intact and to dispatch in each lift a force that could operate by itself, such as a combat team. As pointed out before, the landing areas should be free of enemy opposition at least until the airlanding force has put in sufficient force to accomplish the mission. Therefore, the transported units should not have to engage in combat for some time after they land and normally would have time to become completely organized. However, one must prepare for any eventuality, so it is best to have a self-contained force go forward in each lift.

The tactical plan is another responsibility of G-3 and will be based on the enemy situation, the mission assigned, the availability of supplies, and many other factors. The operations of an "airlanding" division on the ground will not vary much from those of an ordinary infantry division. Such limitations as limited mobility, weaker fire power, and difficulty of resupply must be kept in mind when preparing the tactical plan. Whenever the "airlanding" division is working with or reinforcing other units, the plan of operation must be closely coordinated with those units.

The G-2 of an "airlanding" division will be working in an "out-of-contact" phase before the operation starts. All his information will come from higher headquarters or other forces in contact. It will be necessary for him in this phase to make the division units completely familiar with what they will find in the forward area—that is, terrain, road net, reaction of the inhabitants, enemy units, enemy positions, and similar information. This data may be collected and compiled in an intelligence annex and put out early enough to give all troops time to study it thoroughly.

Once the division goes into the operation, the G-2's job is normal as in any division, but he must remember that his reconnaissance agencies are cut down and limited in mobility and that his communications may not be as good. Also he must remember that early information as to the reaction of the enemy to the airlanding threat is vitally important.

G-2 will also be concerned with equipment for rehearsals, orientation, and briefing. Novel schemes may be devised to acquaint the troops with the terrain they will encounter in the forward area. Sand tables, models, aerial photographs, and three-dimensional viewers (vectographs) may be employed. A large number of men must be oriented and briefed, so the plans and equipment should be prepared well ahead of time and should be effective.

XUM

One of the major tasks confronting G-3, and to a lesser degree the other staff officers, is the preparation of plans for the air movement. Certain major items to be considered were listed in the check list earlier in this article. It is important to note that some of these items will be decided finally in conjunction with the troop carrier commander. In actual fact, since the troop carrier staff officers will have had more experience in this type of planning, they should be able to render valuable help. To achieve the closest cooperation and smooth staff procedure between the troop carrier and the division staffs in this part of the planning, it will be necessary for the two groups to work together, preferably in the same command post or a joint headquarters. This joint headquarters should be maintained until the operation is completed.

In this joint planning phase, one of the first decisions to be made is where the landing area will be. It could be an airfield or strip or just a clear area that will be improved by engineers that go in with the force that secures the landing area for the air-landing troops. If the airlanding force is acting independently as they did in Burma, then they must select suitable cleared areas to land gliders with engineers to construct landing strips. The landing area will determine the number of planes that can be landed per hour or per day and hence will affect the build-up of the airlanding force. This factor together with the number of planes available will determine the time schedule for departure from the departure fields.

The assignment of troops to the departure fields, the designation of serials and the air and ground units that compose them, the times for loading and take-off, and many other instructions can be put out to the units concerned in the form of an Air Movement Table (see Figure 2). This table will be an annex to the field order for the operation, and lists all instruction for the air move. Nothing need be given in the field order about

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Annex..... to FO..... (Troop Carrier Unit) AIR MOVEMENT TA

Maps:..... Place..... D Da.....

Hour, Date.....

1	TROOP CARRIER UNITS				AIR LANDING		AIRBO	
Serial No.	2 *Troop Carrier Unit*	3 *Serial Commander Designated by*	4 *No. Airplanes*	5 *No. Gliders*	6 *Airplanes Required*	7 *Troops to be Loaded*	8 *Troop Commander*	9 *Glider Requir*

Fig. 2.

FORM FOR AN AIR MOVEMENT T

This table will give all information necessary for an air movement. Columns 6, 7, and 8 are for units ri in the pla form may be abbreviated t only the

this part of the operation except a reference to this annex. The preparation of this table is not just a matter of filling out a form. Many determining factors must be arrived at such as time of flight and planes available so that a careful balance between combat units and service units and supplies can be made to fit these factors.

G-4 will be mightily concerned with the allotment of planes assigned him for the execution of the air movement, and with the airfields and additional aircraft and gliders placed at his disposal for resupply. Once G-3 has determined the number of planes that can be made available to him to support the plan of operation logistically, he can easily determine his resupply build-up. Supplies for the operation will be assembled in the departure area by the personnel of the division, where they can be separated and marked according to the priority of delivery desired to the forward airhead, and then they become the responsibility of the Air Forces Service Command. Specially trained and organized units are authorized for the performance of the labor, including aerial delivery, if necessary. Personnel of the division, however, should be qualified to perform this task if emergency requires.

In the forward area, most of the supply points will be located at the landing area or "airhead." The supplies will be unloaded and placed in small dumps near the landing area to prevent long hauls and to facilitate distribution. Evacuation of personnel and equipment will be accomplished at this airhead by the empty planes returning to the departure area. In fact, G-4 activities in an airlanding operation are similar to those of any G-4. He must remember that he now has planes instead of trucks and therefore it is important that he be familiar with the limitations and characteristics of his transportation. He must also realize that the entire operation depends somewhat on his supply plan so that very careful, thorough prior planning is required to meet this responsibility. In this type of warfare, the G-3 and G-4 will be

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...ENT TABLE Annex.....to FO.....Div (A/B or Air Landing Unit)

.....Day..... Place.....

Hour, Date.....

...ING	AIRBORNE UNITS									
...Troop ...mmander	*9 Gliders Required*	*10 Troops to be Loaded*	*11 Troop Commander*	*12 Depart From*	*13 Objective*	*14 Hour Loading Begins*	*15 Hour Loading Completed*	*16 Hour of Departure*	*17 Hour Over Objective*	*18 Remarks*

Fig. 2.

...AN AIR MOVEMENT TABLE.

...ts riding in the planes, such as parachute troops. Columns 9, 10, and 11 are for units riding in gliders. This ...ed to only the columns required.

working very closely together because supplies become critical when everything must be transported by air.

G-1 may have a unique problem in handling prisoners of war and civilians. This problem will depend on the location and situation, but thought must be given to it. Prisoners of war undoubtedly will be taken, and a large number could be a headache to the military police. Enclosures could be set up at the airhead for the division's prisoners of war and evacuation would be normal to that point. However, if some prisoners are wanted in the departure area then the division must return them by the empty planes under division guard.

The straggler problem should not be present in the forward area but careful check should be made at the departure bases before the units take off. Another problem in the rear area is the control of traffic to the departure fields. A complete plan must be made to guide all traffic to the various airdromes used for departure bases. Since the fields may be widely separated and division units will be going to all of them at the same time, a well trained traffic section will prevent many lost columns.

There are many, many details that could be covered for an operation of this type. This article has attempted to outline only the major ones and stimulate thought on others. The success of any airlanding operation will depend on the thoroughness of the planning since the planning phase is half of the operation. In this phase, the plans prepared should be *simple* and *flexible* and *complete*. They should be prepared early and the troops should have ample time to rehearse and prepare.

Firing Captured Ammunition

From an article in *The Field Artillery Journal* December 1944.

CAPTURED 155-mm ammunition was fired for the first time from American guns on 16 October 1944 in a test by a First Army artillery battalion attached to the 3d ("Spearhead") Armored Division. This ammunition had been captured in various dumps through France and Belgium. The M-12 is the only American weapon that could fire it. Earlier in the campaign captured ammunition had been used, but it was fired from German pieces. An interesting chain of circumstances made possible this use of German ammunition in our own guns.

During World War I the French gave their American allies permission to manufacture 155-mm guns identical with their own GPF (*Grand Puissant, Filloux*—Great Power, Filloux—named after the French Colonel Filloux who designed the weapon). Many were produced in the United States, especially at the Watervliet (New York) arsenal.

In 1942, after the 155-mm gun M1A1 (the so-called "Long Tom") had supplanted the GPF in our artillery, the GPF tube was mounted on a modified Sherman tank chassis and designated the "M-12, 155-mm gun, motor carriage." First used in Europe in Normandy, the M-12 has proved itself enormously successful in conjunction with armored forces.

When the Nazis overran France in June 1940, they took over a huge stock of French matériel, among it French 15.5-cm guns and ammunition. The latter would not function in "Long Tom" because of difference in rotating bands, but was ideal for the M-12's.

Inadequate observations from incomplete data by an incompetent observer lead to erroneous conclusions.

—Anonymous

Logistical Planning Problems--Amphibious Operations

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DURING the last three years the United Nations have conducted many amphibious operations. Guadalcanal, North Africa, Sicily, Salerno, Nettuno, Anzio, Marshalls, Kwajalein, Saipan, Guam, and the landings on the continent of Europe have all helped to develop a pattern for operational and logistical planning. Each landing has been a chapter, perhaps adding a vital detail to the whole story which has not as yet been written.

At some later date it will be possible to review thoroughly all plans and developments of the past operations, and to evolve from those experiences basic planning technique and principles which may be studied and followed by planning staffs. Until such information is available, a task force or division G-4, contemplating an amphibious operation, will do well to study operational reports of other units, paying particular attention to the factors influencing decisions as they were made for that operation and introspectively making application to his own pending mission.

PHASES OF LOGISTICAL PLANNING

Generally speaking, most of the supply problems of a combined or amphibious operation divide themselves naturally into four main phases:

1. The planning phase—starting from the time we receive our initial indication of a pending operation, involving staff meetings, coordination with other branches of the service, seeking information, making basic administrative decisions, and at the same time developing plans concurrently with G-3.

2. (a) Equipping of units, maintenance, and loading (all involving decisions); (b) the dissemination of information, preparation of personnel and tonnage tables, stowage plans, profile loading plans, debarkation plans, individual and unit equipment, and many other items.

3. Unloading—supply and evacuation over captured beachheads (unloading initial supply and resupply) involving ships, men, type of unloading craft available, organization of the beaches, types and amount of supplies needed, resupply over water, evacuation of casualties, prisoners of war, and perhaps civilians.

4. Supply on a beachhead through a base port—or the time when the ASF takes over and the supply operations for the task force or division become quite normal.

PLANNING PHASE

The first or planning phase must of necessity begin very early. In fact, it is estimated that at least five months are required to mount a fairly large operation. During this phase, the G-4 will be required to submit his recommendations for the next two phases, the loading and the unloading. Higher headquarters, of course, will make many of the basic decisions as to the equipment and supplies which are to be taken, but it will give due consideration to the desires of the division commander, and the G-4 must be in a position to give him logistical advice. The fourth phase, supply through a base port, will not ordinarily concern the G-4 at this point except as to the period of time the division will be expected to supply itself. Most operations in the Pacific, involving smaller land masses, will be completed before this becomes a reality.

Joint operations have often been classed as the most difficult of all military operations, and certainly most reports from observers and participants bear out the correctness of this statement. These reports also emphasize the importance of supply, and the conclusion is that while the logistical or supply plan will not guarantee the success of the tactical plan, certainly lack of proper logistical support will limit and possibly endanger the entire operation. It is

of the utmost importance to realize that G-3 and G-4 must become a planning team with cooperation at every step of the way. G-4 must know what the tactical plan is going to require and he must be prepared to state whether or not it will be possible to support it. He must know the details of the scheme of maneuver so he can direct the proper loading of the ships. He must know about the attachments which will be working with the division so he can include them in his estimate of supply requirements.

purpose of studying and planning the logistics of future operations by making a study of lessons learned on past operations. The plans group developed an SOP procedure for the division which was published in the form of a general order. Under its supervision a shore party SOP was prepared and also a shore party training guide which was subsequently published by the division engineer. This plans group also developed a list of individual clothing and equipment and a list of organizational equipment which it

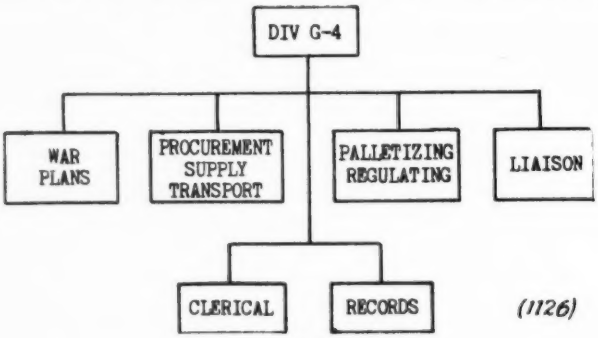

FIGURE 1.

One of the first immediate problems of most organizations will be the re-equipping of the division or units, finding out exactly the status of equipment and taking immediate steps to initiate repair or replacement of all needed items.

All division, corps, or task force staffs will find that during the planning phase in particular they are understaffed with their T/O allotment of officers and enlisted personnel and require reorganization along definite lines if an operation is to be successful from the planning viewpoint.

The diagram, Figure 1, indicates one method of reorganizing the fourth section which has been tried and tested by one division on a large-scale amphibious operation.

The function of the war plans group only will be mentioned, since the purpose of the other sections is self-explanatory. This division set up a war plans section for the

felt would satisfy the requirements for the coming operation. In addition, the group developed the details of a LST-DUKW supply and evacuation scheme which was later adopted and used by the division.

The special staff will also require a certain amount of reorganization in order to promote closer cooperation and planning for the operation. Figure 2 indicates the general lines along which this might be accomplished.

With this reorganization accomplished and tasks assigned, the various staff sections will be able to develop their plans along definite lines, toward a common goal, and to canalize their work with a maximum degree of efficiency, developing tentative plans for all phases of the operation even though only a limited amount of information is available at this time.

By means of liaison officers with higher headquarters, fragmentary orders, etc., the

staff would be in a position to take advantage of every moment.

Receipt of Directive and Subsequent Problems

When the directive is finally received from higher headquarters, one of the first steps will be the necessary staff meeting coordinating all the general and special staff functions and dovetailing the logistical support into the operational plans. The operational plans will be broken down into phases according to their effect on the logistical plan, either from the standpoint of time involved or units and areas. Such a breakdown will further canalize the thoughts of the supply planners from the standpoint of requirements for quantities and type of supply with the usual questions of when and where.

On a larger scale there are primarily two types of operations, a ship-to-shore and a shore-to-shore. A ship-to-shore operation is one in which the troops, equipment, and supplies are combat loaded into large ocean-going vessels, transported across the water, and debarked into landing craft eight to twelve miles off the hostile shore for the assault on the beaches. A shore-to-shore operation is one in which troops, equipment, and supplies are loaded into landing craft, moved across the intervening water, and landed directly on the hostile beaches without transshipment. The principal differences between the two type operations from the supply viewpoint are the quantity of supplies carried and the type and number of ships.

Quantity of supplies.—In a shore-to-shore operation the quantity of supplies need not necessarily be built up to such a high level since it is possible to resupply the operation from a relatively short distance, while in a ship-to-shore operation the assault forces must be self-contained until such time as the next convoy is likely to arrive.

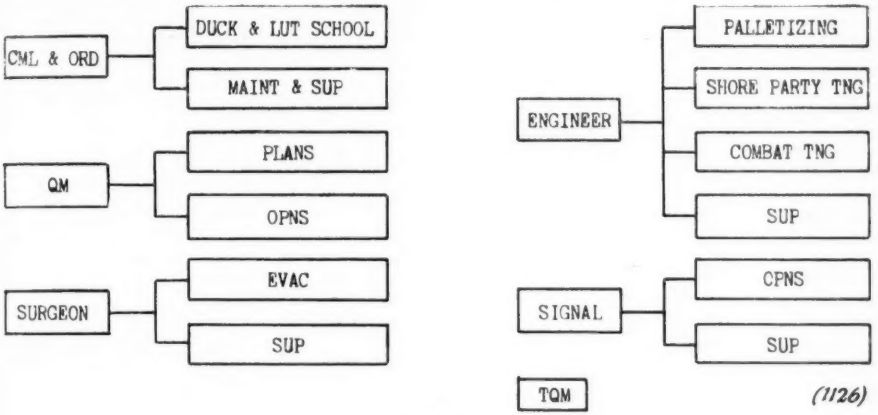

FIGURE 2.

Type and number of ships.—In a shore-to-shore operation supplies can be loaded into relatively small craft and taken directly to the beaches where the landing is made. In a ship-to-shore operation, the ships are necessarily large transports capable of carrying high quantities of supplies and personnel and capable of traveling many miles across the ocean.

Loading

The problem of loading and some of its intricacies are certainly worthy of mention under a separate heading. The individual soldier will be at a total loss unless he can land with the proper equipment and supplies necessary to carry on the fight. A joint

operation is much more than a mere landing; it is a complete campaign. After the landing has been made, the troops must fight to gain their objective, and then the campaign has merely started. It is necessary that the loading plans be prepared with the objective of the division or small task force as a starting point. By determining what is needed at each step towards the objective, G-4 can decide how the ships are to be loaded. G-4 cannot possibly handle all of the loading details himself or within the limited capabilities of his section as organically constituted. Aid in the form of a transport quartermaster (TQM) has been provided to assemble the details of loading the transport. Normally there are two TQM's per ship, that is, APA or AKA, the two principal types of large transports used in an operation of this type. In addition, there is a TQM assigned to the division, corps, or army headquarters, whose principal duty is coordination of the plans made by the ship transport quartermasters.

It has been found from experience that line officers from the troop units being embarked make the best transport quartermasters since they are familiar with the operation of their own units as well as the type of equipment being used. The first essential duty of a transport quartermaster is a complete and thorough appreciation of the ship which he is to load. The ideal situation would be to have all ships with exactly the same characteristics and measurements all fitted to tne needs of the tactical problem. As a matter of fact, each ship has characteristics of its own. While several are probably of the same design and pattern, the TQM must become entirely familiar with the peculiarities of his own ship. He must know the size and dimensions of each hold, exactly what can be placed in each foot of space, which holds will best accommodate the jeeps, and which ones will take a 2½-ton 6x6. This is no simple matter, but is definitely considered a prerequisite to loading.

Loading tables must first be prepared by the units concerned, since they are the ones to determine what is to be taken. The loading plans must be based on the tactical plans, since the tactical commanders are the ones who, in the final analysis, will want the ship loaded so that the men will be able to come out fighting. Once the TQM has been furnished with the loading tables, he will be able to determine whether it is possible to store the equipment into the ship in that particular order. It may be necessary to shuffle the loading tables a bit before he can finally load the ship, since it is possible that when he is putting the equipment into the hold, it may not work as planned. The Navy might object to the loading scheme because it affects the trim of the ship. The TQM may have to sacrifice space at times in order to assure that he has the equipment in the proper order for unloading. Minor adjustments can be made on the spot by the TQM, and that is another reason for saying that he must be familiar with the tactical plans and the operation of the unit.

Changes in loading must be kept to a minimum. There will always be unavoidable changes in the original plan, but staff officers must remember that once their plan has been submitted, any change will work a tremendous hardship on the TQM. After the ship has been loaded, no change will normally be possible unless there is ample time to unload the entire ship and reload it again. This consideration is not always appreciated by staff officers making the plan and the tendency has been to make changes upon receipt of small bits of new intelligence information.

In order to develop loading and unloading plans, a staff officer must understand the basic types of loadings, of which there are four.

First of all there is commercial loading, wherein every effort is made to utilize all available space without consideration for priority of debarkation. From a military viewpoint, we are only interested in commercial loading as a means of bulk resupply.

Secondly, we have convoy unit loading. As the name implies, all supplies, personnel, and equipment are loaded in one convoy. No attempt is made to insure that the troops and their equipment are on the same vessel. In

all probability they will be separated, at least partially. This type of loading could be used for occupational troops. It has certain limitations which are self-evident.

The third type is organizational unit loading, often used for transporting reserve units of an amphibious force. Units so loaded have all their equipment and supplies in the same ship, but since they are not necessarily going to embark ready for assault, ships without heavy booms and hoist gear may be used.

The type of loading with which we are most interested is of course combat unit loading. The simplest way to define it is to say that the unit "comes out fighting." The troops are loaded in accordance with the tactical plan so that they can debark in the order in which they are to be employed.

There are a few principles of loading (often not observed) which the TQM must always keep in mind and which are worthy of mention. They follow:

1. Equalization of lifts by hold section. Vessels are equipped with various capacities. In loading, the speed of the particular booms and whether or not the contents of the hold are to be loaded into LCM's, DUKW's, or LCVP's, etc., must be taken into consideration.

2. Distribution of classes of supply throughout the ship. Don't put all your eggs in one basket; the boom may break down or a particular section of the ship may be damaged by enemy fire. The same principle holds true for distribution of classes of supply throughout the convoy, i.e., don't put all of your important signal equipment or demolitions in one ship; you may lose that ship.

3. Guns and their prime movers should be stowed in the same hold section and close together. They must go to shore in the same landing craft.

4. Never stow high explosives and gasoline in the same hold section.

5. All vehicles should be combat loaded, carrying maximum loads. This reduces unloading times considerably.

6. A minimum of vehicles should be stowed athwartship. They should be stowed fore and aft because the minimum of roll is in that direction and less chocking is required. Whenever possible, vehicles should be stowed with the nose facing the square of the hatch so that they can be easily moved into position for hoisting.

Ships' characteristics which affect the TQM are boom capacity, availability of cargo handling equipment, number and types of landing craft available, slings and hoist gear on ships, strength and construction of hatch covers, whether ships' booms work both port and starboard, size of hatch openings, and clearance of holds.

Another major problem of loading is the dispersion and handling of cargo and vehicles at docks and piers. In some cases, it may be necessary for the division to provide additional personnel in the dock and pier area. It will generally require at least one officer, three NCO's, and a work platoon of about sixty men for each pier.

Unloading

In planning unloading, we must always keep in mind that large transports are particularly vulnerable while they are "laying to" off shore waiting to be unloaded. The Navy is anxious for us to complete our unloading so that the vessels can get under way or at least get out where they have elbow room. Before we can unload any reserve supplies, we must unload the personnel and vehicles plus their prescribed loads. Priority of unloading supplies must be established before embarkation and the master debarkation table in most plans will indicate in detail which landing craft will carry which particular piece of cargo.

This quotation from an observer's report dated within the last year indicates a startling degree of ineffectual planning: "A universal difficulty experienced in almost all amphibious operations has been that of unloading supplies and transporting them ashore. It arises regardless of whether cargo is carried in a larger vessel and then reloaded into smaller landing craft or whether it is transported in LST's. Even when large ships

unload directly onto docks, trouble is experienced. The words 'confusion,' 'disorder,' 'failure,' 'inexperienced personnel,' etc., appear in almost every report of unloading operations. All reports indicate that neither perfection nor even a satisfactory standard on this phase of amphibious operations has been reached."

In many of our landings, insufficient personnel has been on hand to unload cargo from landing craft and to remove piled-up supplies and equipment from the beaches.

There are many principles guiding the preparation of plans for the unloading of supplies. Two of these of major importance are:

1. Supplies are sent ashore in balanced units of fire and days of supply, so that in the event it becomes necessary for the transport to pull out to sea, or if it is sunk, a proportionate amount of each class would be ashore.

2. Only one class of supply and one item of that class is sent ashore in any one boat or landing craft. This greatly facilitates the distribution and handling of supplies when they reach the shore supply dumps.

It should not be assumed that once a priority for landing supplies has been set up it is never varied. If the tactical situation calls for more ammunition than gasoline, the commanding officer of troops can suspend the priority of unloading until this situation has been corrected. Proper use of communications between the shore party and the transport, or the G-4 on the command ship, will facilitate flexibility of the plan. The use of such an expedient cannot be considered to work automatically; it will require careful planning and involve another important principle of loading and unloading, which is that ships should not be loaded to capacity. A figure of some sixty percent of capacity may be considered more satisfactory from the standpoint that flexibility of unloading must be maintained.

The problem of unloading is one of volume and time. Many factors enter into the time interval for unloading, some of the important ones being weather, enemy action, congestion on the beaches, port facilities, and availability of landing craft or DUKW's.

Weather is a very important element in the landing of supplies, not only affecting the loading of supplies into landing craft from the vessel but also in many instances making the beaches unavailable for a period of time. Bad weather will also increase the difficulty experienced by the boat commander in hitting the proper beaches.

Enemy action or the capabilities of the enemy to mass sufficient air or sea power at the beachhead must always be taken into consideration as a possible interruption to our unloading plans.

Congestion on the beaches has been evident in all operations to date. Landing craft have been swamped, supplies have been landed faster than they could be transported to the dumps, labor has been inadequate, heavy vehicles have bogged down on the beach, elements of the shore party have been used as combat troops, traffic control has been insufficiently planned, and many other factors have all emphasized the serious problem confronting logistical planners on this phase of our operations. Many new ideas have been advanced and progress is being made on every landing.

Permanent organization, or at least early organization of shore parties well trained in their duties, commanded by well qualified leaders, and trained along special lines, given an opportunity to train and rehearse with the units they are going to embark, will greatly facilitate a more satisfactory handling of cargo at this vital stage of the operation.

The principle of capturing a port at an early date must be included in the tactical plans, as harbor facilities are certainly desirable for large-scale operations.

Casualties of landing craft and the necessity for prompt maintenance and repair, also facilities for gasoline and oil, should always be kept in mind as a "must" in planning the unloading of supplies.

The characteristics and limitations of

DUKW's and LVT's, the availability of ponton causeways, the availability of ships' platoons, and adequate labor for unloading on a twenty-four hour basis must all be understood and carefully planned by the G-4 and his staff if unloading is to be successful.

The innovation of pallet loading (amphibious sleds) has been extremely successful and greatly facilitates the handling of supplies across the beaches. Rations, medical maintenance supplies, wire, quartermaster supplies, fuel, and ammunition lend themselves to easy packing and handling by pallets. Sixty percent of all bulk supplies palletized may be considered as a good average figure for staff planning purposes, although some operations have greatly exceeded this amount. It is estimated that the use of pallets will reduce the time of unloading a ship from thirty-five to fifty percent.

There is one important aspect of logistical planning that is not normally within the scope of a division G-4's planning problems. This is the determination of supply levels, which in turn influences the amount of supplies that are to be carried with the troops. The initial plan for a campaign of this type will originate on a much higher staff level, and by the time the directive reaches the division many of the basic decisions will already have been made. If, for example, you are planning on the task force level and you are required to determine the supplies that should be carried in a future operation, you must take into consideration the following: first of all, the directive from higher headquarters, as always in military matters; your mission, strength, and the composition of your force; basic decisions made by the commander; transportation available; desirability or necessity of limiting the size of the convoy; the distance involved; the climate and season of the year; the supplies available for exploitation within the target area; and, of course, from the standpoint of time and amount, the ability to resupply the operation.

There are many other miscellaneous problems and considerations which must be included within the scope of logistical planning. Some of these are barter goods, currency, gratuitous issue, subsistence and evacuation of wounded, prisoners of war, and civilians, rehabilitation of ports, waterproofing of vehicles, and even training problems of TQM's, drivers, and shore parties, each of which in some degree will affect the ultimate success or failure of the most carefully laid plans.

There are no substitutes for careful prior planning, for ability to give due consideration to the necessary factors involved, for putting this information in the hands of the troops in such form that they will understand it and at an early date, for willingness to cooperate and coordinate with the other staff sections. Ability to visualize the coming phases of the operation will be clearly indicated when D-day arrives, for then there is no turning back.

Successful action of other units warrants study by planning staffs but should never be followed blindly as a rigid pattern for future operations. Rather, study and understand the principles involved and make proper application to the assigned mission.

While the literary man is laying down the law at his desk as to how many troops should be moved here, and what rivers should be crossed there, and where the cavalry should have been brought up, and when the flank should have been turned, the man who has to do the work finds the matter settled for him by pestilence, empty stomachs, bad roads, heavy rains, hot suns, and a thousand other stern warriors who never show on paper.

—Charles Kingsley in *Westward Ho!*

British and U.S. Orders and Field Reports

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THIS article is written with a view to familiarizing the staff officer with a few of the more common types of British orders and field reports. Today, with our forces working in close conjunction with British and Dominion forces in Italy, the Southwest Pacific, and China-Burma-India, it is felt that a basic working knowledge of their technique and terminology may be of some benefit to those officers who anticipate association with British forces in the field. The content of this article is based primarily on British procedure; but since the Dominion and Indian armies are also trained in the same technique most of what is given here should apply equally to them, allowing for the individual variations peculiar to each theater.

Some of the more common types of orders and field reports which an American staff officer or American commander may expect to encounter when operating as part of a British-American task force are:

Operation Orders
Operation Instructions
Warning Orders
Field Messages
Administrative Orders
Intreps
Sitreps
Standing Orders

The British Operation Order is the equivalent of our formal field order. It is issued by the force commander to subordinate units. It consists of a heading, body, and an ending.

The heading is generally similar to that used in our own field order. It includes the issuing unit, date of issue, order number, copy number, and map reference. The principal difference is that our Allies do not list the place of issue, for security reasons, but instead assign each order a reference number in the heading which is used for acknowledgment. In fact, the British give all their field messages and reports a serial number and require that the addressee acknowledge receipt. When receipt is acknowledged, it means that the unit commander receiving the order has read it and has understood it. Another difference is that the hour of issue is not found in the heading but in the ending following the signature of the officer publishing the order.

The body of the operation order is divided into five major subdivisions or headings which correspond quite closely to five headings of our field orders. A comparison between these headings is given below.

OPERATION ORDER (British)	FIELD ORDER (U. S.)
Information	Information
Intention	Decision or Mission
Method	Tactical missions for Subordinate Units
Administration	Administration
Intercommunication	Signal Communication

Under the heading "Information" the British place both information of the enemy and of friendly troops, similar to our own practice.

The British "Intention" is a clear, concise, complete statement of what the commander intends to accomplish in the operation. It is an expression of the commander's will or object in the operation phrased in general terms such as "18 Corps will break through the LARISA position and capture AMNYNTAION." The "Intention" must be in the words of the commander and is either written or dictated by him. This is done to insure that all subordinates fully understand exactly what the commander intends to accomplish. It differs from our Paragraph 2 (Mission) in that the details of maneuver such as the direction of attack, formation, time of at-

tack, boundaries, and other control measures are normally omitted and instead placed under the next heading, "Method."

Under "Method," our Allies specify what each unit is to do in order to carry out the commander's intention. In general, it is similar to Paragraph 3 of our field order which contains tactical missions for subordinate units. Under this heading, detailed instructions are given to subordinates covering the essential "What, when, and where." Normally we will find units having the most important mission listed first, such as assault infantry and artillery, followed by the remaining units of the command in subsequent paragraphs.

The fourth heading of the British operation order is known as Administration and is identical in its general content with our Paragraph 4. Administrative matters which tactical units need to know immediately and that cannot wait on the issuance of an administrative order are listed here in the order of their tactical importance. Items commonly found are instructions regarding ammunition, petrol, oil, lubricants, and water.

Their last heading "Intercommunication" closely corresponds to our "Signal Communications." Here we find instructions with respect to the means of signal communications to be established, including location of headquarters, radio frequencies and call signs, liaison to be established between headquarters, pyrotechnics and prearranged light signals. Often the British will also include the location of their rear headquarters (our rear echelon of headquarters). On the other hand, the British do not customarily prescribe an axis of signal communication. In general, their Intercommunication instructions tend to be more detailed than ours and include certain items which we would put in a signal annex.

It will be noted that we have been careful not to refer to paragraph numbers in dealing with the British Operation Order. This has been done intentionally because the paragraph numbers of the British order do not connote definite items of information and instructions as in the case of our own order. Thus, in a British order, Paragraph 10 may include in one instance the tactical mission of a subordinate unit; in another, administrative instructions; and in still a third case, signal instructions. From this it can be seen that the numbering of their paragraphs is highly flexible and may, and usually will, vary from one order to another. A word of warning then: do not look at the paragraph numbers of a British order to find the particular information desired, but look instead at the heading. The British because of their flexibility in paragraphing always retain their headings and write them out in their orders.

Another difference in technique is that our Allies have no compunction about inserting both information and instructions in the same paragraph where they feel that this will produce greater clarity. In other words, many times information items which we would place in Paragraph 1*b* of our field order will be placed in one of the several paragraphs under Method in the Operation order.

The ending of the order follows the last numbered paragraph. Here we will find the letters "ACK." This stands for "Acknowledge" and, as already mentioned, requires acknowledgment by the officer to whom the order is sent. The order is signed by the senior general staff officer over his rank and appointment. The force commander does not sign the order as is customary in the case of our orders. When the senior staff officer signs the order, he fills in the time of signature in longhand and the method of distribution, i. e., special dispatch rider, and liaison officer.

Following the distribution, it is normal to find the distribution given. The British do not make use of our standard distribution "A" but prefer to list each recipient of the order and the copy number sent to each. As stated before, all orders are acknowledged.

While it would be impossible to cover in the scope of this article all terms used by the British in their order, it is believed that the following should be known by any officer working with the British in the field:

BRITISH TERM	U. S. EQUIVALENT
Start line	Line of departure
Forming up place	Assembly area
Brigade group	Combat team
Foremost Defended Localities (FDL)	Main Line of Resistance (MLR)
Junction Points	Limiting Points
Localities	Areas
Under Command	Attached

The Operation Instruction is another form of order used by our Allies. On the higher level of command, it fills the role of our Letter of Instructions. In the lower levels of command, such as battalion, company, and platoon, the Operation Instruction corresponds to our mission type order.

The British use *warning orders* to alert their units of impending operations. These are usually prepared in field message form and are generally the same as our orders both as to form and substance.

Our Allies frequently employ the oral order which follows the form of the operation order. Whenever possible, oral orders will be confirmed by a written Operation Order. If no change has taken place in the content of the order as originally issued, there will appear in the heading of the written Operation Order "No change from Verbal Orders."

The *field message book* used by the British varies somewhat from ours. The body of a typical fragmentary order prepared in field message form is given below as an example.

TO: 15 Inf Div CE Q
FROM: 2 Corps G 25

513 and 514 Fd Coys RE under Comd 15 Div from 1800 hrs 20 Jun BAPHRA SO342 for clearance of mine fields. Revert to Corps Comd on capture YANINA. Ack.

Converting this message into our own terminology, it might read as follows:

TO: 15 Inf Div, Corps Engineer, Corps G-4
FROM: II Corps

513th and 514th Field Cos (Engineer Cos) Atchd 15th Inf Div 1800, 20 Jun BAPHRA SO342 for mine field clearance. Revert to Corps control on capture YANINA. Acknowledge receipt.

The British Administrative Order contains all instructions of an administrative nature which the field forces require for the logistical support of an operation.

The most striking difference is that, whereas we have separate and distinct forms for our field order and administrative order, the British follow the same form in both their Operation Order and their Administrative Order.

The heading of their Administrative Order is similar to their Operation Order. We usually commence our administrative order with a statement to the effect "Administrative Order 10 to accompany FO 11." The British convey the same thought with the wording "to be read in connection with Operation Order 11."

We have set forth below a comparison between the headings of the British order and our own.

ADMINISTRATIVE ORDERS

(British)	(U. S.)
Information	(No comparable heading)
Intention	(No comparable heading)
Method	Supply Evacuation Traffic Service Troops and Trains Personnel
Intercommunication	Miscellaneous

It is apparent from the above that the major divisions of the two orders are dissimilar.

Under the paragraph heading "Information" the British include information of both the hostile and the friendly situation. However, if the Administrative Order is to be issued concurrently with the Operation Or-

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der and be given the same distribution, this heading is usually omitted and reference made only to the Operation Order.

The second major heading, "Intention," is always included in the British order, whereas no provision is made in our administrative order for the inclusion of the "Mission."

It is under the third or "Method" heading that we find the bulk of the information which we place in our administrative order. In separate numbered paragraphs our Allies take up Maintenance, Rations, Petrol, Oil, Lubricants, Ammunition, Ordnance, Medical, Water, Traffic and Burials.

Lastly, the British place under the heading "Intercommunication" the location of both the main and rear headquarters of the issuing unit and any special instructions on the administrative signal net. In general, this heading corresponds to our paragraph entitled, "Miscellaneous." The ending of the order corresponds to the operation order except that it is signed by the senior officer of the Adjutant and Quartermaster General staff or for him by his representative.

Intreps and *Sitreps* are informal Intelligence and Situation reports which are disseminated to higher, adjacent, and subordinate units on the Army, Corps, Division, and Brigade level.

We do not have any prescribed G-2 form which is an exact counterpart of the Intrep. Our Intelligence Summary is probably the closest approximation. The content of a typical Intrep is given below.

To: 15 Inf Div, 10 Inf Div, 12 NZ Recce Regt, 12 Army, 250 Tac Gp.

FROM: 2 Corps G8

Intrep enemy preparing defensive position YANINA. Estimated strength four Inf Bns, one heavy Panzer Bn, three Btrys Fd Arty, two Btrys Med Arty, one Btry 170-mm and some 88- and 50-mm guns. Air reports further movement of small columns south from KORCA. Identification from 375, 376, 377 JAGER Bns. PW state Bns at 60% strength. Small dets EAST of LAKE YANINA under observation 12 NZ Recce. Ack.

The Sitrep is now in common use by U. S. forces in at least one theater of operations. The Sitrep addressed to all major units of the command sums up the situation of each unit for the benefit of all. Similar to the Intrep, it is prepared in message book form and sent out informally as needed to higher, adjacent, and subordinate units. The following serves as an example:

To: 10 Inf Div, 15th Inf Div, 12 N Z Recce Regt, 12 Army, 250 Tac Gp.

FROM: 2 Corps G 15

Sitrep ref special map YANINA 1/27,000 and 1/700,000 BALKANS. 15 Div in contact enemy position south of YANINA SO252. Two regts up. One regt in res having cleared enemy from Hill 1172 R9542. Patrols report strong pts protected by wire and mines astride and EAST of rd ST IOANNES SO346-YANINA. WEST of rd enemy strong points but few mines encountered. 12 N Z Recce Regt in contact enemy outposts SOUTH of LINGADES SO851. 10 Div completing concentration in area TEROVON SO925. Ack.

The last type of orders on which we shall touch are *Standing Orders*. These orders are similar to our Standing Operating Procedure. Each British unit has its own standing orders covering those features of operations which lend themselves to a set procedure without loss of effectiveness. Standing orders will govern the action of a unit in the absence of other instructions. Similar to our own technique, the British do not customarily include in their Operation Order instructions which are covered in their Standing Orders except for emphasis. It will always be advisable for any U. S. officer assigned to a British unit to take it upon himself to become familiar with the Standing Orders of that unit as soon as possible. This will save

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him both time and embarrassment in the performance of his duties.

In conclusion, it will be observed that while British orders stress brevity, they have not carried it to the extreme telegraphic form that we have. Also their orders rely less on standard technical phrases than do ours and permit greater individuality of expression. In general, we may say that their orders and field reports do not differ radically from ours and that once the obstacle of nomenclature has been overcome, any experienced U. S. officer should not encounter difficulty in joint operations with our British or Dominion Allies.

Medical Problems of the B-29

From *The Bulletin of the U. S. Army Medical Department.*

THE crews in B-29 Superfortresses, when aloft, live in air-conditioned, heated, and soundproofed cabins and in near-normal air pressure. Free from wearing oxygen masks and from sub-zero cold, the airmen complete a mission with a minimum of fatigue. Pressurized cabin planes, first produced in 1937, went into commercial transport operation as Stratoliners in 1939. The basic problems of breathing in the stratosphere had been solved by flight surgeons, aviation physiologists, and aeronautical engineers in the years preceding and following construction of this pressure cabin plane; however, many problems remained when, in the last year, flight surgeons of the Army Air Forces were assigned to the 20th Bomber Command. At 40,000 feet an aviator would die if he attempted to breathe free air. To keep him functioning normally the latest type of oxygen mask has been provided. The AAF aircraft oxygen system automatically increases the oxygen breathed from the twenty percent found in free air all the way up to 100 percent at altitudes over 30,000 feet. Above 40,000 feet the air pressure is so low that even 100 percent oxygen is inadequate for the flyer and the only way to extend his service ceiling is to increase the air pressure at that altitude. This has been done in the B-29 in the same way that airplane engines are supercharged in order to get enough oxygen into their carburetors; that is, by compressing the air.

After engineering requirements for the B-29 had been established, this question remained: What would happen if a cannon shell went through the cabin and caused a rapid release of air pressure, somewhat like a pinprick in a toy balloon? To solve this problem the Aero Medical Laboratory made numerous tests on experimental animals and human subjects. An officer was placed in a sealed cabin and the cabin was placed in a low-pressure chamber in the laboratory. The pressure in the chamber was lowered to that of a high altitude while the pressure altitude in the cabin was held at a moderate figure. A screwdriver was then plunged into the sealed cabin. As air rushed out, it was as if the officer had been catapulted in an instant five miles up through the atmosphere. His cheeks and lips bulged and his chest contracted as air was sucked from his lungs. Being in very thin air, he put on an oxygen mask and then was all right.

Each crew member has a double supply of oxygen so that if one system is shot out, another is available. Heat to protect them against sub-zero temperatures of the stratosphere is provided by the cabin supercharger, and a new type of electrically heated flying suit which the individual can wear as an ordinary suit when the cabin heat is sufficient or he can plug it in when he feels cold. In addition, each man is provided with an insulated type of flying suit known as the intermediate alpaca.

B-29's have two food warmers, which contain trays, each holding sufficient food for one full meal and a snack. Food and drink are prepared prior to flight and kept cold until two hours before use when the warmer is turned on.

MILITARY NOTES AROUND THE WORLD

GERMANY

Antiaircraft Parachutes:

The Germans have a shell which, fired from the ground, opens at about 8,000 feet and blossoms into a parachute, from which is suspended one or more thin steel wires which may foul propellers, wings, or control surfaces of low and medium-flying aircraft. Explosive charges are attached to some of the parachutes. Another apparent purpose of parachutes of this kind is to impede the vision of bombers seeking a target.

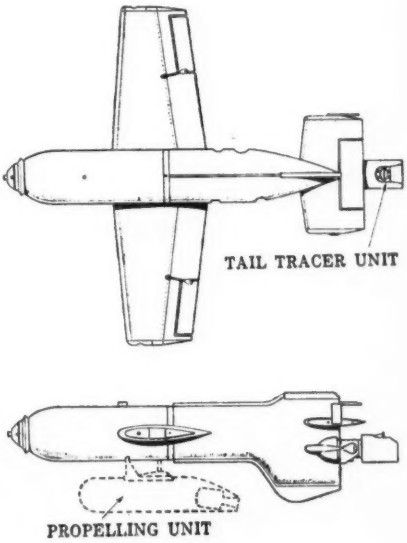
(*Air Force*)

The Hs293:

One of Germany's reaction-propelled flying bombs, incorrectly called the glider bomb, is the Hs293. Carried usually under the wings of such types as the He 177, the Do 217E, or the FW 200, the radio-controlled, rocket-propelled Hs293 is used mainly against shipping. It is composed of a relatively small fuselage which carries a pair of wings, tail surfaces and vertical fins, a tail tracer unit and a rocket-propulsion unit. The forward part of the fuselage is the bomb body (total weight about 1,300 pounds), while the rear section houses the radio-controlled automatic pilot and its control unit.

When released from the parent aircraft, operation of the propulsion unit and the tracer unit is initiated and the bomb fuze is armed. After launching, it is immediately brought under radio control from the parent aircraft, which is effective over a range of about five miles, although the usual practice appears to be to release the missile two or three miles from the target.

The Hs293 is said to be reasonably maneuverable. Its height can be maintained and corrected. While most versions function on impact, one type, presumably used against bomber formations, is equipped with a radio impulse fuze.

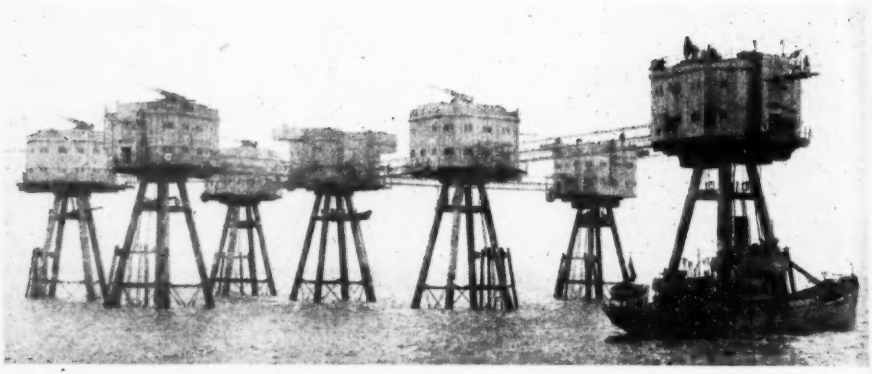


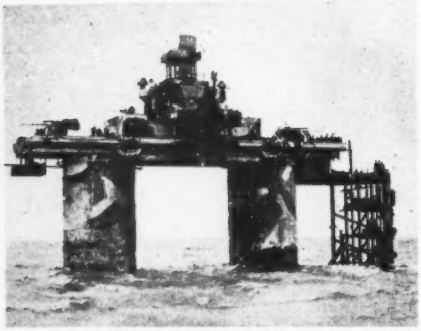
The Hs293 has an overall length of twelve feet four inches, and a span of ten feet three inches. With a total weight of about 2,000 pounds, the maximum speed is reported to be about 300 miles per hour.

(*Flight*, Great Britain)

GREAT BRITAIN

British Sea Forts:





Two types of sea forts that were planted on Britain's shipping lanes to protect east-coast shipping and keep London's port open when the Germans were only a few miles away are shown in the pictures on this page.

The seven towers interconnected by catwalks constitute a fort operated by the Army and manned by a garrison of 120 to 130 men drawn from the Royal Artillery, Royal Mechanical and Electrical Engineers, and other specialist units. The towers are of steel mounted on concrete legs. Six of them carry antiaircraft guns and the seventh is a control tower. Each steel "box" is thirty-six feet square and twenty feet deep, and stands about fifty feet above the water.

The other type of sea fort consists of two concrete towers fifty feet high, connected with a steel superstructure on which antiaircraft guns and equipment are mounted. Inside the towers are the living accommodations for the crews, store rooms, and magazines. These forts stand a considerable distance from the shore and are commissioned as naval ships and operated by the Royal Navy. They are manned by Royal Marines and naval personnel.

(*The Sphere*, Great Britain)

Biggest Bailey Bridge:

The biggest Bailey bridge yet built was recently thrust across the Chindwin River in Burma. It is 1,096 feet long. Five hundred soldiers sweated at its making for two days undisturbed, although the Japanese were only six miles away. All the enemy did was to fire an occasional random shell. Their air force did not show a wing-tip until the bridge had been in use ten days, when Zeros attempted to attack. Its planning was a noteworthy piece of organization, but the colonel in charge says that a bridge twice as long could easily have been built. He was given notice of what was required and

worked out his plan in forty-eight hours; the only alteration was to shift the site one hundred yards because Japanese shells were falling where it was originally intended to build the bridge. The components of the bridge were brought from Calcutta, hauled at least 300 miles by road, assembled in ponton sections on the Myitha River, and floated a half mile downstream to the site.

(From a British source)

British Naval Power for the Far East:

The day the war against Hitler ends many British battleships will be available for Far Eastern duty. Nineteen battleships are the minimum estimate. As to aircraft carriers, an estimate is difficult, as so many new carriers have been added but not announced. However, there are the *Indomitable, Implacable, Indefatigable, Illustrious, Victorious, Formidable, Argus, Furious* and dozens of smaller converted cruisers and merchant ships that have been doing convoy patrol. These will all be available in the dragnet against Japan. As to cruisers and destroyers, the list exceeds 300 vessels of all types, tonnage, and fire power. There are, besides, twelve classes of British submarines with as many as a dozen submarines in each class, possibly 100 British submarines which will be immediately available.

(New York *Herald Tribune*, reprinted in *Britain*, British Information Services)

Bomb Sighting Through Clouds:

The "Mickey," a radar device which permits bombing through dense clouds and smoke screens, has been officially described in reports from London as a triumph of British-American teamwork.

Called the "gen box" by the British, the instrument transmits radio waves which strike surface objects and rebound to a receiver on the bomber, giving the bombardier an outline of cities, coastlines, ships, railroad yards, and other targets. Individual buildings can be brought into focus.

British inventors developed the first such instrument when the Germans began the battle of Britain in 1940. Postwar use of the instrument is expected to be extensive.

(From news reports)

New British 7.2 Howitzer:

The first pictures of the new British 7.2 howitzer show it in action in France, when a battery of these howitzers was pounding

enemy communications at a distance of nine miles. The gun, operated by a heavy battery of the Royal Artillery, weighs ten tons and fires a 200-pound shell up to a range of 16,-

000 yards, a little over nine miles. It is mounted on a twin-wheel carriage fitted with pneumatic tires which are five feet six inches in diameter. It has hand-controlled brakes, and when the gun is fired the recoil is such that it runs back, with brakes on, up the ramps provided. The pictures show these ramps clearly, from front and rear.

(*The Illustrated London News*)

JAPAN

Japanese "Water Sausage":

Japanese on Saipan, in addition to carrying regular canteens, used a "water sausage." It was made of a cellophane-like substance filled with water and tied off into short links. It was carried in the pocket or slung around the neck. Thirsty Japs bit into a link to drink.

(*Quartermaster Training Service Journal*)

Hazards for United States Aircraft:

The Japs drop from airplanes 150-foot lengths of thin, twisted steel cable. At one end of the cable is attached a one-pound bomb, and at the other end, two small parachutes to keep the cable vertical as it drops.

The bomb, cable, and parachutes are packed in a can seven by three and a half inches, constructed in two halves, hinged across the bottom. The bomb is a cylinder of cast steel, two and a half by two inches, filled with explosive. The fuze functions on impact from any direction.

As the can drops, it flies open and releases the cable and parachutes. Besides the danger of the bomb exploding upon contact with our bombers, the cable presents a definite fouling hazard.

(*Air Force*)

FRANCE

The French Navy:

For the time being, France's effective strength in capital ships appears to be reduced to two units, the *Richelieu* and the *Lorraine*. The former is reported to be operating with the British Eastern Fleet, and the latter was one of the ships engaged in covering the landings on the Riviera in August. The *Jean Bart*, sister ship of the *Richelieu*, was badly damaged in action with United States ships at Casablanca in November 1942, and there is no word of her having been refitted yet; while the *Dunkerque*, *Strasbourg*, and *Provence* were all reported as in unseaworthy condition when Toulon fell.

In cruisers, the French Navy is somewhat better off, three of heavy type (*Suffren*, *Duquesne*, and *Tourville*) and six of lighter design (*Gloire*, *Montcalm*, *Georges Leygues*, *Emile Bertin*, *Jeanne d'Arc*, and *Duguay-Trouin*) being in service.

Other useful ships remaining in fighting trim include the aircraft carrier *Béarn*, twenty destroyers, twenty-three submarines, three sloops, ten frigates, eight corvettes, eleven fleet minesweepers, and a considerable number of coastal craft.

If the French Navy is to regain its former position in Europe, it is evident that a considerable program of new construction will need to be put in hand as soon as the country's resources are sufficiently restored for the work to be undertaken.

(*The Navy*, Great Britain)

U. S. S. R.

Artillery Day:

The Soviet Government has issued a decree instituting Artillery Day, which is to be celebrated annually on 19 November. It was on this date the Red Army launched its offensive at the approaches to Stalingrad. A mighty cannonade heralded the beginning of the battle which was to be the turning point of the war. In the Stalingrad battle, between 160 and 240 guns were massed along each half mile of front.

(*Information Bulletin*, Washington Embassy of USSR)

Girl Snipers:

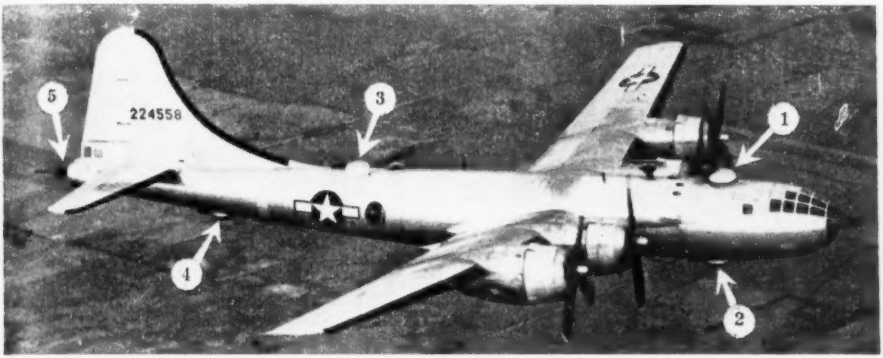
A total of 20,000 enemy officers and soldiers, or the equivalent of two German divisions, have been killed by graduates of the Central School for Volunteer Girl Snipers in Moscow. During the war the school has prepared several thousand sharpshooters for the front line, chiefly daughters or sisters of servicemen. Their ages range from eighteen to twenty. Decorations have been awarded three hundred of the graduates.

(*Information Bulletin*, Washington Embassy of USSR)

UNITED STATES

Fire Power of the "Superfortress":

Five multiple-gun, remote-controlled turrets give the Boeing B-29 "Superfortress" the airplane from any direction. No. 1 is the upper forward turret; No. 2, the lower forward turret; No. 3, the upper rear turret; No. 4, the lower rear turret; and No. 5, the



the most highly developed defensive armament system of any airplane in the world. The system is completely electrical, making possible instantaneous and heavy concentration of power on any target approaching tail mount. Each has two .50-caliber machine guns, and the tail mount in addition has a 20-mm cannon.

(*U. S. Air Services.* U. S. Army Air Forces photo)

New Gas Detector Kit:

The newest-type gas detector, the M-9 chemical agent detector kit, a development of the Chemical Warfare Service, has been issued to overseas units for protection against sneak gas attacks in the event gas warfare is initiated by the enemy. This detector kit, which reacts with great sensitivity to several types of war gases, is virtually a miniature laboratory packed into a 2½-pound cotton duct carrier slung by a strap from the wearer's shoulder. In the hands of a trained soldier, this kit will detect the presence of both persistent and nonpersistent chemical agents.

Gas sentinels equipped with these detection devices are able by taking frequent tests to spot the presence even of invisible, odorless blister gases.

(*Army and Navy Register*)

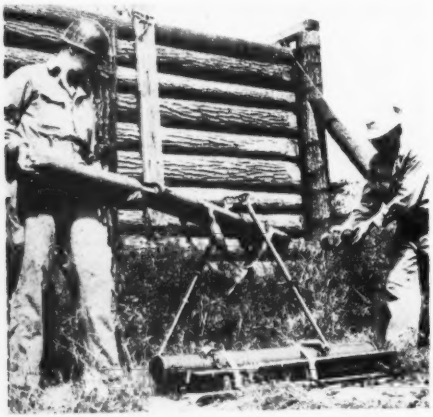
Smog Generator:

A small smoke generator that produces a tremendous volume of what weather experts would call smog, a combination of smoke and fog, has been developed in the General Electric Laboratories, using the same principles as worked out by Dr. Irving Langmuir and Vincent J. Schaefer for the larger generators. The small generator, called the Besler, is for use in jungle trails where a portable outfit is needed for a quick protective coverage for relatively small areas. The smog is produced in copper tubes, where a particular type of oil and water as an atomized spray is heated by a gasoline flame. The air and oil-water spray are blown through the tubes by a small gasoline motor made entirely of aluminum. The outfit can be carried in the back seat of a jeep.

(*New York Herald Tribune*)

New 4.5-inch Rocket Launcher:

The Army's new 4.5-inch rocket launcher is the big brother of the famous bazooka. It is more than two inches larger and packs

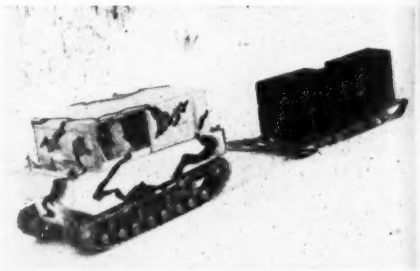


all the destructive punch of the 105-mm howitzer. The rocket and launcher together weigh only a little more than fifty pounds

and can be easily carried by one man and quickly assembled. Wires lead to a safe distance where the battery which fires the rocket by electric detonation is located. The soldier stands about one hundred feet to the side when he fires the rocket.

(Official U. S. Army photos)

The "Weasel":



The new cargo carrier M29, the "Weasel," shown above, was developed for use over snow, mud, and other treacherous terrain. It can carry three passengers or cargo in addition to the driver. It has an amphibious brother, the "Water Weasel," M29C, with a longer, boat-shaped body, hinged rudders, and tracks which give propulsion on both land and water.

(*Army Ordnance*)

New Chemical Weapons:

Army and Standard Oil of New Jersey officials have disclosed three new chemical warfare weapons. These are a smoke screen which, ejected from a portable generator, will cover a city block with smoke from but two quarts of chemical; an incendiary bomb packed with two and a half pounds of jellied gasoline which spreads burning "pancakes" three feet across, quarter of an inch deep, over factory targets with devastating effect; and an improved flame thrower, M1-A1, which, using much thicker fuel, shoots a rod of molten fire 180 feet, three times farther than earlier models. The latter, fiercest of the three, has been used extensively in the South Pacific, where it is called the "GI hotfoot," and under an experienced operator can be made to "bounce" flame around corners.

(*Marine Corps Gazette*)

FOREIGN MILITARY DIGESTS

Lines or Localities. An Examination of Modern Defense

Digested at the Command and General Staff School from an article by Captain W. R. Young, MC, Royal Artillery, in *The Journal of the Royal United Service Institution* (Great Britain) August 1944.

"THE use of the word 'line,'" says Miksche in his chapter on the Principles of Defense, "is today very dangerous. Any one who talks continually of 'lines' or the 'line' will find that his mind is dominated by linear conceptions of fighting that no longer represent realities of modern battle."

What, we may ask, are those "linear conceptions" which, even before the publication of *Blitzkrieg*, were condemned by military theorists generally in all the belligerent countries?

That the enquiry is called for is suggested by the fact that, in spite of the rejection of "linear conceptions" and the adoption of "localities" by all armies, the defensive seems no longer to be "the stronger form of war."

War is an empirical science, and theory must, therefore, constantly be related to experience. Clausewitz is worth quoting on this point. "If any means," he says, "is once found efficacious in war, it is repeated; one nation copies another, the thing becomes the fashion, and in this manner it comes into use supported by experience and takes its place in theory, which contents itself with appealing to experience in general in order to show its origin but not as a verification of its truth. But it is quite otherwise if experience is to be used in order to overthrow some means in use, to confirm what is doubtful or introduce something new."

In this controversy, however, we find that experience speaks with two voices, since offensives have triumphed against localities as well as against lines. So neither party can back out of the argument by appealing to "experience in general."

The argument starts in 1916 when the Germans, after their experience in the battles of the Somme, made radical changes in their defensive policy. Their new doctrine embodied several features which do not concern us here; and one which does. For it is in the new tactics that we first come across the idea of a defensive system based on a loose grouping of *detached posts* instead of "rigid and easily recognized lines." From these detached posts have developed the company, battalion, brigade, divisional, and corps localities of the modern manuals.

The better results—for they were better—which the Germans achieved in 1917 must be credited to the new defensive tactics; and it may be claimed that the detached posts layout was the most distinctive feature in these tactics. For other features like depth in defense and counterattacks can be reconciled with a linear system; they were, indeed, part of the old defensive policy, though more stress was laid on them in the new.

To what, then, was due the success of these detached posts? The short answer is that it was due to two factors. They were that British attack was (1) linear, (2) dependent on artillery support.

Linear Tactics

Before proceeding further it is necessary

to have a clear definition of the term "linear tactics" which must figure largely in this enquiry. It is suggested that it describes battle formations and movements in line rather than in column, and that it also involves the idea of "all along the line." Thus linear attack means attack on a wide front and, since it is "all along the line," it must be a dispersed rather than a concentrated assault. It may seek to envelop the enemy by extending its line beyond his flanks, or it may endeavor to push the whole of the enemy's line back. But it cannot aim at penetrating the enemy's center.

Now there is nothing tactically unsound about the line formation in attack. It forces the defender to disperse his fire instead of concentrating it on the head of a column; and it enables the attacker to bring all his weapons into play simultaneously, since none of them are masked. But the tactics often fail if they remain rigidly linear throughout; if the line is always looking to its dressing; if A and C mark time just because B and D have been held up; if no advantage is taken of an opening which presents itself.

Even before 1916 the Germans had discovered that the continued resistance of quite small pockets of defenders in a line which we had penetrated often led to the subsequent withdrawal of the troops who had effected the lodgement. If, then, resistance in a few spots was able to hold up our advance on a wide front, the German High Command could see little point in garrisoning a continuous trench line. The troops thus released from front-line duty could be used to stiffen the defenses behind the front. German defense, therefore, ceased at the end of 1916 to present resistance "all along the line." It was no longer linear but *area defense* which confronted our assaults in 1917; and area defense seems from experience and theory to be the right answer to linear attack.

Defeating the Artillery

Ludendorff was fully alive to the fact that the power of the British attack lay in the artillery. He noted that thick barriers of wire and lines of trenches were conspicuous targets for our guns, which soon destroyed them; that the deep tunnelled dugouts, which alone provided shelter from our heavier shells, proved to be traps for prisoners when our infantry advanced close behind a creeping barrage. The High Command decided, therefore, to alter the character of German field defenses. In general, concealment or inconspicuousness was to be the aim—light strands of wire rather than belts, posts instead of trenches. And they decided that "the very deep underground posts in the front trenches had to be replaced by shallower constructions."

The German front-line soldier had, however, already discovered that by leaving his trench and occupying a shell hole outside it he escaped most of our deliberate bombardment. Such shell-hole posts were indistinguishable among the thousands of similar holes which covered the terrain; they were scattered in a haphazard grouping and so tended to foil the creeping barrage, which advanced in straight lines; and they were the "shallower constructions" recommended by Ludendorff. For all these reasons the shell-hole post policy was found efficacious at the end of 1916; it was repeated in 1917; "and soon the thing became the fashion and took its place in theory."

When, however, Ludendorff launched his offensive in March 1918, and his subordinate, von Hutier, broke through the thinly held lines of the Fifth Army in a number of places, the defense, whatever its original layout, soon resolved itself into a loosely-grouped collection of posts. But these proved quite ineffective in stopping the German advance. For the German attack was of a new type. It aimed at finding weak spots or gaps in the defenses and infiltrating through them. It ignored the pockets of resistance and boldly pushed past them into the depths of our positions. It exploited every success and never worried about its failures—or its flanks. It was the very opposite of linear attack, and it certainly seemed to provide the answer to the localities system of defense. This type of attack thenceforward became the fashion in the German Army; and after the Great War it

was copied by at least one other nation—the Japanese.

Japanese Infiltration

It is the Japanese who will serve as a link to bring the argument forward to the present war; for it was in the accounts of the campaign in Malaya that we again began to hear the term infiltration. We held posts on all the roads—"the likely avenues of approach"—and the Japs simply filtered past us through the jungle.

It is true that the jungle provided unusually favorable conditions for infiltration. Nevertheless, it must be emphasized that it was not "linear conceptions" of defense which caused the loss of Malaya. For that explanation has been solemnly put forward by critics.

We discover, then, from the experience we have examined so far, the curious anomaly that the so-called "modern" defense based on localities is ineffective against the modern type of attack. This, indeed, is to be expected in theory since a defensive position which consists largely of gaps must be peculiarly vulnerable to an attacker whose object is penetration of the center. A continuous line, however weak, would have to be broken before penetration could be achieved; but attacking troops can penetrate a group of localities by passing between them.

Modern theorists, nevertheless, continue to pour scorn on those who talk of lines, and to advocate the localities policy which has repeatedly failed in its objective. Yet they are forced to admit that, at any rate in conditions of bad visibility, localities can be bypassed by infiltrating infantry. So they advocate active and constant patrolling between the localities—and thereby surrender their whole case. For while the patrols are out the localities are linked into a continuous line; when they are not out, infiltration can take place.

The Russian Theater—Theory and Practice

We have in *Soviet War News* a supply of day-to-day information on the fighting in Russia, and it is proposed to quote extensively from this source. First we may note that Russian theories of defense are orthodox, *i.e.*, anti-linear, as is shown by the following passages from an article, "Defensive Strongholds," by Colonel Shishkin in the issue of 20 October 1942. The italics are ours.

"During the War of 1914-1918 defenses usually consisted of a *front line* along which deep trenches stretched over tens and often hundreds of miles. The *peculiarity of present-day defense is its depth.*"

After pointing out that the attacker can always concentrate against weak points and break through, the author goes on: "For this reason deep defenses are created *where the enemy blow is most likely to fall. . .* This has produced a special system of defense made up of strongholds and *centers of resistance.*" The object of these strongholds, we are told, is to break up the attack, to tie up forces which might otherwise be thrusting forward, and to thin them out.

Then follow the usual admonitions about the necessity for all-round defense, for interlocking fire systems covering the gaps, and, of course, for mobile patrols. The Germans, says the Colonel, used this system of localities during January and February 1942, but "nearly all their strongholds were situated in towns and villages. The use of inhabited points as strongholds meant that the separate elements of the center of resistance were not always too well related. The Germans supplied the link by detailing small mobile groups . . . to patrol the roads."

After this exemplary exposition of the "modern" view it is curious to turn back to the issue of 15 May 1942 and read in Major Tronenkov's article, "New German Defense Tactics," that in March and April of 1942 the Germans had given up the practice of converting villages into strongholds. Tronenkov states, moreover, that "the Germans had *no separate centers of resistance* such as have characterized their defense until now, but *three solid fortified lines.*"

An even earlier issue, dated 22 April 1942, reported that the Germans had "managed to build *solid lines of fortifications stretching for many miles. Every offensive operation by the Red Army inevitably entails a break through such defenses.*"

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The trend towards lines grows as the Russian war goes on, and the development does not seem to please the attackers. Of Orel we read that "the Germans' *defenses* are the *most formidable* they have ever built on this or any other front. . . . The first belt of defenses consisted of *five rows* of trenches. . . . The second belt consisted of three *lines of trenches*. . . . Then followed a third belt and behind that there were innumerable *lines* of defense in depth." (31 July 1943.)

The final evidence is provided by a report from a Reuters and BUP correspondent (*News Chronicle*, 12 February 1944). "Everywhere on the Russian front there has been a noticeable change in German defensive tactics. *Trench lines* similar to those of the last war are replacing the German hedgehog defenses, says *Red Star*. Captured orders show that the Germans have been told to dig *trenches linking all their strongpoints*." And *Soviet War News* of 15 March 1944 tells us that "the Germans resorted to the trench system for two main reasons: first, owing to shortage of manpower; secondly, because the Soviet troops have learned to perfection the art of infiltrating through gaps between enemy strongpoints, and of outflanking and blockading them."

And so the wheel turns full circle. The Germans in 1916 invented local defense to counter linear attack. In 1918 they invented infiltration which counters local defense. In 1943 and 1944 they revert again to lines to counter infiltration.

The important point is that the Germans thought that they stood a better chance of winning a defensive battle by holding continuous lines than by holding separate localities. The Russians, too, know a great deal about war. They plainly admit that they have found localities an easier proposition to attack than lines.

The Russians, of course, have found ways of breaking through solid defensive lines. Colonel Khitrov (*Soviet War News*, 17 September 1943) describes the sequence: "Our units penetrated into the Germans' positions, split up the enemy forces into several groups and destroyed each of them separately. When the enemy forces have been split up into a number of groups, and there is *no continuous front line* . . . the existence of open flanks and gaps in the enemy's line makes it much easier to filter through behind his lines."

The blunt truth is that defense according to the "modern" book has rarely succeeded and has repeatedly been made to look ridiculous. Modern attack aims at penetration. Defense, therefore, should seek to prevent penetration. And this can best be achieved by means of *solid defensive lines*.

The Defense of Aachen, City of the Emperors

Translated and digested at the Command and General Staff School from a German article by Kurt Neher in *Deutsche Allgemeine Zeitung* 26 October 1944.

SINCE the 3d of October when an American loudspeaker before the German positions in the southwestern portion of Aachen demanded the surrender of the grenadiers and announced in a brazen lie, "Aachen is surrounded," bitter weeks have passed for the Americans. They have been weeks of wild, raging battles such as these intruders never before experienced on European soil. During these days, the dream of a bloodless conquest of Germany vanished for our enemies. Three American infantry divisions and two armored divisions struggled at the cost of the heaviest casualties in this meter-by-meter warfare for this first bulwark in front of the German western fortifications. The price they paid, only to be forced to abandon the hope of attaining great operational objectives, was so heavy that the prospect of another winter of war, according to their own statement, came as a shock to them.

During these weeks, Germany, after the collapse of the French front, gained the urgently needed time to make preparations for defense against the enemy. Positions of great depth were constructed which make

every little village west of the Rhine a new Aachen. The hard labor by which millions of cubic meters of earth were removed was performed without direct pressure by the enemy. Thereby, the tragedy of the battle and loss of the City of the Emperors receives an heroic significance which serves as an end to its thousand years of existence, but it will continue to live in the history of the Reich, deathless and indestructible along with the heroic bravery of the men who defended it.

After the beginning of the great American offensive on 2 October, the struggle for the city was carried on in three phases. After a breakthrough by the American 7th Army Corps toward the west in the Stolberg area (see sketch) had failed in the face of the German defense, the American divisions of the 19th Corps began a new thrust over a broad front north of Aachen. From 2 to 7 October, the battle raged in the vicinity of Geilenkirchen. After heavy, bloody losses, the Americans had to content themselves with the line Palenberg-Uebach-Bäsweiler which extended south of Geilenkirchen. The rising curve of the tanks destroyed, which on 4 October amounted to fifteen Shermans, on 5 October had already risen to twenty-two, and on 6 October had reached the figure of forty-five, is the clearest proof of the fury with which the German defense met the American attack. The successes of the enemy were wholly out of proportion to his losses, at the cost of which he purchased these meter-by-meter advances. Step by step, the attacker was forced to bleed his way forward.

There is no question but that the resistance of the tank grenadiers and People's Grenadiers in the positions around Geilenkirchen forced the enemy to abandon his plans for a breakthrough. After 8 October, which introduced the second phase in the battle for the City of the Emperors, it became clear that the Americans were making an effort to encircle Aachen in a large pincer movement. And now followed a second attempt in a narrower area with still greater massing of all available forces. The Americans now plunged southward, from the north along the west fortifications, through Alsdorf, Bardenberg, and Kohlscheid toward Aachen. At the same time they pushed westward from east of Aachen, through Verlautenheide and Haaren toward the eastern edge of the city. After this thrust from the vicinity of Stolberg and after the breaking up of his attack outside Geilenkirchen, the intention of the

enemy to encircle the city became clear as day. The battle for the village of Verlautenheide, which often changed hands several times in a single day, became more and more bitter. At 1050 on 10 October, the commandant of Aachen was ordered by the Americans to surrender the city within twenty-four hours. The demand by the Americans to surrender a German city without fighting was

refused. Aachen was not yet surrounded by the enemy. All necessary transport was still reaching the city over the highway from Würselen, although on 11 October the enemy had already effected a deep penetration for the first time, in the southeast, at the Rote Erde railway station. At 1745 the next day, he was thrown out.

With the approach to the eastern edge of Aachen, which had been paid for dearly by losses of tanks and infantry, and the approach of the enemy from the north, the third and last phase of the fighting began for the brave defenders under the hail of the area bombing and the hurricane of the artillery fire. In the constantly changing enemy attack, which by means of an armored division often squeezed the life line of the advanced strongpoint down to a width of a few hundred meters, the ground supply route was finally broken on 14 October. From now on, the Luftwaffe took over the supply mission.

The 13th of October was again a hard, difficult day for the men of Aachen, but one which they went through by dint of superior grit while the Americans looked forward to being in possession of the city in a matter of a few hours only.

And so it went, day after day. Time and again the grenadiers issued from cellars and from behind ruins to attack the Americans. They mopped up streets and squares, broke into the enemy strongpoints, and interfered with the enemy transport. The Americans were terrified by this kind of fighting, which appears unfair to them with their "never retreat" policy, as it costs them dearly. It is possible that our "never retreat" adversaries were members of that American 29th Infantry Division which allegedly has assumed the tradition of the "Maryland Blue and Gray Division" from the last World War.

In the southern part of Würselen on 15 October, the Americans, simultaneously with German counterattacks in the center, were hurled back 600 meters to the northwest. Not till 18 October were the Americans, who had penetrated into the city from all sides, in a position to carry out a concentric attack on the heart of the city. The fight raged for hours with cold steel for the positions of Laurenzberg, till Colonel Wilck gave the order to occupy new positions on the Lousberg heights. The position of the heroic garrison had become smaller and smaller. It had been almost impossible for the supply planes during the last few days to find the tiny place at night where they were to drop their precious loads. The surrounded grenadiers lacked the proper means for marking the place for dropping the supplies since, with the least gleam of light, a murderous fire by the enemy started.

But they were still holding out on 19 and 20 October.

The burning City of the Emperors is a symbol of our furious, uncompromising determination to give up not a foot of our land without a fight. The loss of Aachen was hard and bitter enough for us. But it had to be. There was to be no uncertainty on the part of the enemy or on our part. Both for him and for us it was destined to become a gleaming beacon fire signifying that German soil shall be paid for only in blood.

What the German Thinks of Us—and of Himself

An article in *Aim*, army magazine of the British Middle East Command, No. 28, September 1944.

A German prisoner of war, a panzer grenadier who spent sixteen weeks at Cassino, told us that we made the following mistakes. We don't necessarily endorse his views, but they're certainly worth thinking about.

ALLIED infantry attack very cautiously and bunch up too much when they move against their objectives. They are exceedingly negligent in finding concealment, and therefore can be seen most of the time. When moving

against their objectives, their lines are not staggered enough and are deep instead of wide.

Soldiers on the double, upon coming to a sudden halt, frequently remain in a kneeling position waiting to be shot at, instead of throwing themselves to the ground. Then, when nothing happens, they get up in the same place where they were kneeling before and continue their advance. I think this is extremely dangerous, especially over terrain dotted with snipers as it is in Italy. I have seen at least a dozen Allied soldiers die because of this stupidity.

In the German Army we think it is just common sense that, when a soldier attacks, he selects an objective for each phase of his advance. Upon reaching this objective, he will immediately throw himself to the ground and crawl ten to fifteen meters to the left or right, carefully avoiding observation. There he will wait a few seconds before continuing his advance.

Sometimes, however, the Allied infantryman will drop after a shot has been fired and roll towards the right. We Germans know this. We have also noticed that Allied infantry run towards their objectives in a straight line, forgetting to zigzag, thus making an excellent target.

In Italy especially, rocks can be utilized to greater advantage by the attacking forces than they are. While I was at Cori, there was a large space between two rock formations which afforded a clear field of fire, and we covered it with a light machine gun. The first Allied troops that tried to pass between the rocks moved very slowly and in line, and some of them were hit. Not until then did the others dash through the space.

Many Allied commanders lack aggressiveness. They do not realize when an objective can be taken, and consequently attacking troops will turn back just before they reach it.

At Cassino I was in a valley with ninety-seven other German soldiers in foxholes and slit trenches. First a group of Sherman tanks attacked within range of our *Faustpatrones* and three tanks were knocked out. The infantry, who should have followed right behind the tanks, were about 500 meters behind and therefore too far away to seek the cover of the armored vehicles. The tanks immediately retreated. When the infantry saw that the tanks had turned about, they too turned back and retreated. The whole valley should have been cleaned up in a matter of minutes.

This great distance between Allied armored units and infantry was apparent almost every time. There was one instance when Allied tanks smashed across our foxholes, to be followed an hour later by infantrymen, who were driven back by a hail of machine-gun fire. We Germans rely on you to make these mistakes.

The fish-net-like cover on the helmets of the Allied soldier is dangerously ineffective. Both Americans and British can be seen at a great distance during daytime because this netting gives the distinct outline of the helmet. The camouflage used by the German soldiers on their helmets is better because it disrupts the outline of the helmet and the canvas piece cover can be painted to suit the terrain.

The battalion commander of the same battalion to which the prisoner of war belonged, whose criticisms of us appear above, made a report on his own troops, which we captured. This is what he said.

Defense, with its digging in, hiding, and continuous waiting, is contrary to the nature of the German soldier. Every company commander must tell his soldiers again and again that the life of a whole company depends on the alertness of a single soldier. We must be prepared for new dirty tricks on the enemy's part every day.

I do not want to hear soldiers complain that they have not eaten, slept, and drunk for two days and that the situation is impossible. "Impossible" does not exist in our dictionary.

Observation, due to monotony, has become very poor. The slightest movement of bushes must be reported, as they may be pieced together at higher headquarters to form a big picture. NIL reports are of the

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utmost importance. Observers do not use camouflage, and if they do, it usually does not match the terrain and the observer stands out like a flag. The companies seem to do their utmost to tell all their actions to the enemy. Camouflage discipline is poor.

One can see again and again that our soldiers consider the night is their enemy. Most men are completely helpless at night.

The enemy is using the night for much of his activity and has achieved considerable success. I have noticed that the enemy succeeds in using his machine-gun fire very effectively at night. He can lay his machine-gun fire ten to twenty centimeters above the top of our foxholes so that even at night one does not dare to stick one's head up.

Our soldiers have learned the same tactics but are too lazy to prepare their weapons for night firing. Many of our soldiers have taken up the attitude "For heaven's sake don't shoot." This can be traced back to the fact that the enemy, due to his superiority in material, has often laid an artillery barrage on individual soldiers. *If we want to bring the old spirit back, the soldiers must learn that their most important weapon is their shovel.*

Soldiers must prepare alternative positions. Never shoot out of the main positions during daylight. It must not happen again (as it did with one company) that soldiers do not shoot at Allied troops with the excuse "that they would only hit the sand." It is the responsibility of the company commander to see that his company can be ready for action at an instant's notice.

Our men are not well trained in patrolling. They always want to attack after a heavy artillery preparation. That is wrong. Creep up in Indian fashion and arrive in the enemy's midst suddenly. It is now self-evident that machine-gun belts must be wrapped around the stomach and that pay books and all papers must be left behind.

Men must be trained to understand short military orders. Our organization is poor. It is only changed after the enemy has taught us a lesson. The other day we lost a deserter. That this man is going to talk is obvious. He will at least have told the enemy the time and route our food carriers change. That the enemy has acted on such information is proved by our losses. Why aren't times changed from day to day? Ambulances do not arrive at the front fast enough. The other day they took three-quarters of an hour and I believe the wounded bled to death.

The penetration of the enemy between our lines occurred mainly because the gap between two of the companies was too large. If the company on the left fails to maintain contact, the company must in its own interest maintain contact to the left.

Communications have been very poor. During a barrage, never send just one messenger. Due to artillery, our line communications have been cut most of the time. We must therefore employ radio instead, which has been impossible owing to lack of radios. There are far too few messages. The junior officers never place themselves in the position of the higher echelons. These are mostly so far to the rear that they cannot contact them. Every man from the private up must make it a habit to report as often as possible. The distribution of ammunition has been satisfactory. The ammunition dumps have proved their worth.

The Mortar in Battle

Translated and digested at the Command and General Staff School from a Spanish article by Luis Villalba Gómez-Jordana in *Ejercito* (Spain) November 1944.

THE mortar is not built for use against lineal targets but for use against areas. Since the zigzag trench constituted the greater part of the defense elements in our campaign [the Spanish Civil War], it is clear that the mortar was not very effective against them. But against the hedgehog position with its circular defense, which covers a

homogeneous area of considerable extent, mortar fire may be very effective.

The advantages possessed by the mortar are known to everyone. These are great tactical mobility, sufficiently high rate of fire, a very curved trajectory, and the ability to find a suitable firing position under a variety of terrain conditions. Its disadvantages are its great dispersion and the difficulty of keeping it supplied with ammunition.

Because of the fins and the curved trajectory, wind increases dispersion. In calm weather, however, acceptable precision may be expected.

The other disadvantage is the difficulty of maintaining a supply of ammunition. When firing at a medium rate, a platoon of four pieces normally consumes forty projectiles per minute, which means 2,400 in an hour of firing, with an approximate weight of 10,000 kilograms. There is no need of emphasizing the impossibility of providing, with the means ordinarily at the disposal of a regiment, such a quantity of ammunition to its battalions in the first echelon. This difficulty forces the adoption of two measures: centralization of mortars and holding to a minimum the employment of the weapon.

In Russia, we have seen this problem of ammunition supply between regiment and battalion solved by the use of small all-terrain vehicles provided with armor affording protection against portable weapons, which drove at high speed and quickly unloaded their ammunition. Except for mountainous terrain, there is no doubt that this is a very acceptable solution.

Although possessing these two disadvantages which limit its employment, the mortar is capable of affording the troops of the first echelon what the machine-gun companies can but rarely afford—continuous and effective support.

In the majority of cases, the machine guns are prevented from delivering fire from their positions back of the front line or, at best, are able to do so only at certain points. Only certain types of terrain permit of firing over the heads of one's own forces.

On the other hand, the neutralization effect of machine guns and automatic rifles against moderately fortified positions is insignificant. Few lucky shots will penetrate the vision slits of the embrasures and cause casualties among the personnel serving the weapons. But the mortar can achieve very effective results, and in the case of inadequately protected machine-gun nests its effect is destructive.

The projectile against which no defile affords protection and the report of which is perceivable only to an experienced ear, the deadly effect of its blast wave, the noisy roar, and the heavy dust raised by it in soft soils are factors which produce notable morale effect on personnel who are subjected to mortar fire.

The effectiveness of the mortar projectile is very considerable and the effect of its blast wave is as terrible as that of a 15.5-cm shell. Its effective radius is from ten to twelve meters. When the wave is reflected from solid walls (bunkers, shelters, machine-gun nests, etc.) its effect is tremendous.

There is no doubt but that our command was perfectly aware at the termination of our Civil War of the highly important role that could be played by mortars in battle, and it is for this reason that they have been issued in double number to units of the battalion type. But we believe they may be issued in still greater numbers, and the German Army provides us an example with its six 80-mm pieces, and the Russian Army with its eight 90-mm pieces. In the German Army, these pieces still belong to the machine-gun company, although they enjoy wide organizational independence within it. But in the Russian Army the mortars constitute an organic company.

In the approach march, the decentralization of mortars is rendered necessary by the width of the front and lack of knowledge relative to the elements of the situation. It will be necessary, therefore, to assign some mortars to the attacking echelons during the first phase. But this does not mean that the battalion commander is not to reserve for his own use a sufficient number of mortars, since the artillery may not be able to come with

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the aid of its fire with sufficient promptness to handle an emergency involving the battalion.

It is the general opinion that the mortars should not intervene in artillery preparation, but when we consider the ease with which the ammunition supply may be maintained at such times, there is room for another view of the matter. It goes without saying that mortars cannot operate during the first moments of the artillery preparation, for the reason that even field artillery pieces are not effective against well-organized positions. But as soon as small-caliber guns open fire on the zones which have been devastated by more powerful artillery, mortar fire may complete the destruction and cause a considerable number of casualties to the enemy because of its rapid and unanticipated fire.

When the line of departure is not far from the objective of the attack, it is possible that the mortars will be able to support the movement of the battalion from the departure position to a line very close to the objective and, only when this has taken place, displace forward to help their unit in new advances or in the consolidation or retention of the conquered ground. When a large supply of projectiles is available at the position of departure and further displacements are not expected, it is possible to provide continual fire at all times at the request of the units of the first echelon or as a result of the simple observation of the course of the battle.

The case in which the line of departure is sufficiently distant from the position attacked to necessitate forward displacement of mortars during the attack is different. Before the displacement there is an abundance of ammunition at the position of departure. But as soon as the mortars have displaced forward, the small quantity of ammunition which will then be available will limit the effectiveness of mortar fires.

Therefore, it is entirely useless to increase the number of weapons, for the battalions or larger units are not provided with means for maintaining their ammunition supplies, such as the German all-terrain car.

Because of the ease with which its supply of ammunition is maintained in defense and the precision of its fire by means of previous corrections, the mortar becomes a formidable weapon in defense.

We believe the idea of distributing the 81-mm pieces throughout the deployed companies in order that these may take care of their immediate defense to be erroneous. They can handle this with their automatic weapons and the 50-mm light mortars. The 81-mm mortars should be employed in a centralized manner firing either on their own initiative or by request from the front line.

The mortars can take part in the counter-preparation, combatting enemy positions of departure which, in the majority of cases, can easily be identified. Once the attack has started, the mortars can lay down successive barrages over the route of the enemy attack at those points where the artillery barrage does not attain the desired density. If a penetration has been effected by the enemy, they are able, much before the supporting artillery is able to attempt it and with just as much efficiency, to prevent communication between the enemy spearhead and the rear, thus isolating it from its reserves. Likewise, by means of rapid, violent, and unexpected concentration of fire, they can be used for preparing counterattacks.

In purely passive situations, the mortar is an efficient harassing weapon. For this purpose it is much to be preferred to the heavy infantry artillery which a few armies, such as the German, now possess.

The first quality of a commander in chief is a cool head which correctly mirrors objects, and is never heated or gets dazed or intoxicated by good news or bad.

—Napoleon

Offensive Power of Soviet Aviation

Translated and digested at the Command and General Staff School from a Russian article by Colonel N. Denisov in *Krasnaya Zvezda* (Red Star) 16 and 17 August 1944.

THE plans of the German blitzkrieg were based on deep and rapid penetrations by means of aviation and tanks, and the German aerial armadas were built according to this principle. On the whole, at the beginning of the invasion of the USSR, more than seventy percent of the German aircraft consisted of bomber-type planes, i.e., of means for the aerial offensive. The German fighter aviation numbered several thousand planes, most of which were suitable for short aerial combat only. These facts predetermined the methods of the employment of their aircraft as well as the tactics of the Fascist fliers.

THE SOVIET ILYUSHIN-2 (STORMOVIK) ATTACK PLANE. (SOVFOTO.)

This was a hard time for our air forces. We needed more and newer planes; yet the national aircraft industry was moving into the remote regions of the country.

The method of *active defense* used by our air forces up to the battle of Stalingrad was combined with strong aerial counterattacks by our bombers and Stormoviks, directed against the troops of the enemy and his deep rear areas down to Königsberg, Berlin, Stettin, and other centers of German war industry. In aerial engagements at that time, we had to deal with numerically superior enemy groups. But the enemy's superiority began gradually slipping away from him. Our aircraft industry, established in new places, began supplying our air forces on an ever increasing scale with more modern and perfected types of planes. Our fliers were gaining experience and shifting from aerial defense to offensive operations, which were sporadic at first but quite effective.

The Germans were feverishly modernizing their plane output, striving to adapt it to the new conditions of aerial warfare. The resistance encountered by the Germans in engagements with Soviet fliers and the appearance on our side of a means of massed action from the air—the Stormoviks—forced the enemy to increase the proportion of fighter planes in his air forces. In his methods and tactics, there appeared the so-called

vertical maneuver, i.e., fighting in a vertical plane, which required not only good flying qualities on the part of the aircraft but also excellent training of the pilots. At the same time, enemy bombers started shortening more and more their radius of action, limiting their activity mainly to the battlefield and the immediate rear of our troops. Although the tremendous losses suffered by the enemy air forces were still being replaced, it became increasingly difficult for the German aircraft industry to maintain the former correlation of forces. In the meantime, our aircraft industry was releasing an ever-growing number of planes endowed with high combat qualities. A crisis was ripening in the furious aerial warfare.

This crisis reached its peak during the battle of Stalingrad. In the course of this historic battle, *the offensive power of the Soviet aircraft* manifested itself for perhaps the first time in this war, and succeeded in changing drastically the situation in the air. During the first stages of the battle of Stalingrad, the Germans, clinging to the principles of their initial strategy of combined aerial and tank onslaught, tried to save the honor of Douhet's theory, which had been bankrupted in practice, and endeavored to influence the outcome of the operation decisively by means of their air forces. This effort expressed itself in the powerful aerial action by General Richthoffen's numerous bomber armadas at Stalingrad. Yet the numerous and uninterrupted German bomber raids on the city did not break the resistance of the defenders. At the same time, our aircraft, while repelling these aerial attacks, were grinding the German air forces. Stalingrad became a genuine graveyard of enemy planes.

The final stages of the battle of Stalingrad are notable for the new methods of operational and tactical use of the air forces developed by our command, though practiced at that time on only a small scale. We refer to the *aerial offensive* which became subsequently one of the basic forms of cooperation between the aircraft and the ground forces.

After the battle of Stalingrad, the offensive power of our aircraft was increasing with each new operation. Over the battlefields appeared numerous new fighters by means of which the Germans tried to regain tactical advantage. They also tried to do this on a larger, operational scale. While preparing the Kursk offensive, for example, the enemy made several attempts to wear out our air force. Such was the air battle in Kuban, and the massed raids of enemy aircraft on Rostov, Kursk, Gorki, and other Soviet cities during the spring of 1943. In these battles the enemy demonstrated his complete failure in using his new modified methods of aerial combat.

Thus at the second turning point of the present war—the battle of the Kursk salient—our air force was in excellent condition. Its flying machines and armament, both in quantity and quality, were fully adequate to meet the requirements of the situation in the air. The command and the flying personnel, through the experience gained in the past battles, were considerably stronger and more mature. All this manifested itself during the very first days of the battle of the Kursk salient, when the Germans began suffering hitherto unprecedented losses in the air. Thus, for the first four months of the second World War in 1939, the Germans lost in the West only about 300 planes, while over the Kursk salient, during the first days of the battle, our pursuit fliers downed more than 900 German planes. Our bombers and Stormoviks, with new armament produced in the course of the war, were of great assistance to our ground troops engaged in fighting new models of German tanks.

Since the battle of Kursk, the situation in the air has changed rapidly and definitely to our advantage. The aerial strategy of the enemy was clearly shifting to defense. The ever increasing offensive power of our air force, the tremendous losses in men and matériel suffered by the enemy on the Soviet-German front, and a certain weakening of the productive capacity of the German aircraft factories as a result of their systematic bombing by the Allied air forces, all created conditions for the German air force which

have predetermined its entire combat activity up to the present time.

At the end of the last year the German air force underwent profound changes. In its composition, means of defense are now prevailing. Bombers now comprise only forty percent of the total strength. The remainder are fighter planes, and a good half of them belong to the so-called heavy pursuit aircraft designed to stay long in the air in defense of one or another objective from bomber raids.

Thus the initial German aerial strategy, which relied upon aerial superiority and which was necessary for the blitzkrieg, was bankrupted a long time ago. And there is no doubt that fighter planes cannot replace the real shock force of aviation—bombers and attack planes—cooperating with ground troops.

The growth of the Soviet air force depends directly on the role assigned to it by the military doctrine of the Red Army and on the economic base from which are drawn the material resources for the consolidation and strengthening of our aerial superiority. Our aircraft industry has solved many problems in the field of plane and motor construction, armament, and equipment, and has managed to create and develop mass production of models which surpass enemy planes in quality. This has enabled our air force command, in accordance with the principal idea of the employment of air forces by the Red Army—the idea of cooperation with ground troops—to find, in the course of the struggle with the Germans, the basic forms and methods of aerial warfare which increase the offensive power of our aviation.

If our aviation has succeeded in accomplishing *its basic mission of combat assistance to the ground troops*, it is due, first of all, to the correct understanding of the three basic problems which determine the reality and high efficiency of this assistance.

These problems are: first, *the establishment of aerial superiority* over the battle area; second, *support of ground troops during the breaching of enemy defenses;* and third, *cooperation with the ground troops* during their advance beyond the tactical zone of the defense.

One of the decisive conditions of successful cooperation between the aircraft and the ground troops is, beyond doubt, the clearing of the air over the battle areas of enemy planes. Our ground troops, when freed from the menace of massed enemy air raids, acquire the necessary freedom of maneuver, and our air force is enabled to complete its missions with maximum effect and without serious losses.

In determining the expenditure of forces detailed for clearing the air of enemy planes, our air force commanders are not guided by the mere correlation of figures. More important is the quality of aerial action of the units assigned to insure air superiority. There were cases, for instance, when fighters flew numerous sorties during the day and yet failed in protecting their ground troops from periodical raids by enemy bombers.

What, then, may serve as a criterion of aerial superiority over a given sector of the front? Experience confirms that it is practically impossible to prevent the appearance of isolated groups of enemy planes over the battlefield. Nevertheless, if the battle activity is well organized, if control of air operations is flexible, and if the aerial attack is constantly accelerated, it is quite possible to force the enemy to unload his bombs over an area occupied by his own troops and to prevent him from approaching our battle formations. It may be considered that the air force has attained aerial superiority over the battlefield when, first, enemy bombers are unable to inflict organized blows on our troops, and when, second, combat missions of our bombers and Stormoviks are accomplished without any losses or with minimum losses from enemy fighters.

This is achieved by the Soviet commanders through the use of various methods. Direct aerial combats and raids on enemy airfields constitute, beyond doubt, the basis of fighting enemy aircraft. Also of great importance is the protection of bombers and Stormoviks. In battle practice, two different methods of protection are used: independent action of

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fighters in the zones of combat activity of Stormoviks and bombers, and the method of direct escort of each combat echelon. Which method should be given preference?

Experience shows that in offensive operations, when the resistance of the enemy varies in intensity, both methods should be combined to the extent determined by the situation. For example, in the initial period of the operation, when the enemy is not yet able to organize serious resistance in the air and the forces at his disposal are immobilized by our fighters clearing the air over the battlefield, direct escort of attack and bomber planes may be reduced to a minimum. The situation changes, however, when hostile resistance stiffens and our bombers and attack planes, considerably widening the zone of their action, penetrate ever deeper into the enemy dispositions. In this case, it is necessary to supplement the independent operations of the fighters by providing each bomber and attack echelon with direct escort. The forces detailed for escort duty may vary, but should in any case be sufficient to attain superiority over the enemy.

Air superiority is not an end in itself, but is for the benefit of the ground troops. The idea of cooperation between aviation and ground forces also contains, along with the distribution of missions with respect to place, time, and targets, the idea of coordination of efforts in routing the enemy. The best form of this cooperation, as established by battle experience, is massed aerial blows. It should be noted that, during the initial stages of an offensive operation, the combined action of the aircraft and ground troops usually develops more or less according to plan. In other words, although the battle activities of the air force and of the ground troops during the initial period of the offensive are subject to changes, the cooperation (in the sense of its organization) remains, nevertheless, constant, to a certain extent.

The organization of combat sorties by bombers, attack planes, and fighters during the breaching of enemy defenses by the ground troops seems simple but is actually far from being so. The senior commander and the air force commander, in whose hands are concentrated all the threads of the centralized control of the air force, should solve a number of basic problems during this phase of the operation. The fact is that massed aerial blows by means of which a high density of fire is obtained may be either extremely concentrated as to space and time or extended over a wider sector and delivered within a longer time. In this connection, it may not be without interest to cite two typical cases which may serve as original examples of how to use air forces in attack.

In one sector of the front, the breakthrough of the enemy field defenses was preceded by a long aerial preparation. According to all the calculations, the enemy defensive system was sufficiently shattered. However, the attack, which started in a good tempo, soon petered out. The main cause of this was the fact that our attack was not a surprise. A series of aerial blows had been recognized by the enemy as an aerial preparation for attack. His troops had taken cover in shelters, he managed to bring up reinforcements, and the attack was repelled.

In the other case, the course of events was different. Here the air force commander, immediately preceding the infantry and tank assault, struck the enemy an unexpected, powerful, and massed blow from the air. A number of field fortifications were destroyed. The hostile artillery which had not succeeded in displacing to alternate firing positions was neutralized and partly destroyed. The enemy troops in a number of sectors were pinned to the ground. All this created favorable conditions for the assault of our ground troops.

The length of the time interval between the start of the aerial preparation and the start of the assault is of utmost importance. In attacking enemy field fortifications this lapse of time may be very small. It is different in the breaching of enemy defenses abounding in permanent fortifications. There, preparation is characterized by the methodical destruction of enemy positions, and this undoubtedly takes much more time, up to several days. Finished off with an aerial assault like the one which was launched

last spring by our air forces during the breakthrough operations of the German fortifications in Sevastopol, it enables the attacking troops to launch their ground assault under the most favorable conditions.

Our air force commanders, increasing in every way the offensive power of the air forces, have attained excellent results in the technique of aerial preparation and support of infantry and tank attacks. They have succeeded in creating a density of aerial fire which amounts, at times, to more than one hundred tons of bombs per kilometer of the front designated for breaching. Moreover, the Stormoviks, using direct fire, release a tremendous quantity of bullets and shells covering the whole target area. All this makes it possible not only to demolish fortifications and neutralize machine-gun nests, but also to destroy the maximum number of enemy troops before the assault and during the fighting inside the hostile defensive zone. Thus, our air force, performing during this stage of the operation one of its essential functions (cooperation with the ground troops), creates favorable conditions for the attack and then accompanies the ground forces up to the time when they emerge in the "operational space" [literal translation of the Russian term denoting areas beyond the tactical defensive zone].

The overwhelming majority of the offensive operations of the Red Army are based on a bold and broad maneuver of the mobile units which enter the breakthrough area and fight in the operational space. The dynamics of these blows require of the supporting aircraft a maneuverability just as flexible and purposeful. Our air force commanders, in addition to purely organizational measures for the strengthening of the offensive power of their forces, strive to subordinate their whole activity to the tasks of maintaining indissoluble cooperation under conditions of a maneuver developing on the ground and in the air. These tasks are aerial pursuit, aerial support of the mobile troops surrounding the enemy, blockade of hostile encircled groups, etc.

The operations of the troops in operational space are characterized, as is well known, by extremely complicated and rapidly changing situations. Consequently, much depends here on the skill of the air force commander in selecting independently and at the right moment the most favorable direction of the main blow, that is, in determining the point of application of the main effort which is actually decisive for the outcome of the battle. An example will confirm this point.

A German tank division formed the rear guard of a large retreating group. The success of the pursuit depended on how quickly our forces would break the resistance of the German armored covering forces. After a reconnaissance sortie, the commander of the bomber and Stormovik group made a decision which at first puzzled the officers of the mobile units. He sent his main forces tens of kilometers beyond the battle area. These planes attacked several times a German motor column proceeding toward the retreating enemy column. The idea of the maneuver became clear on the next day when the Germans started burying their tanks in the ground. It turned out that our bombers had destroyed a column of trucks carrying fuel for the armored division. Deprived of mobility, the German rear guard was routed, and our units rushed quickly forward.

Good operational and tactical plans, exceptionally precise control of the operations of large numbers of planes, excellent combat training of the flying personnel, and careful study of enemy tactics have enabled our air force to make a steady increase in its offensive power. The present tasks of our fliers and air force commanders consist in firmly maintaining air superiority, in improving their offensive mastery, and in securing, by means of skilful cooperation with the ground troops, the complete rout of the enemy.

The New Western Front

Translated and digested at the Command and General Staff School from a German article by Captain Ritter von Schramm in *Völkischer Beobachter* 4 and 5 October 1944.

THE German army in the west has again seized the initiative and after weeks of defense has again gone over to the offensive. Even from mid-September on, it had gradually been slowing the offensive of the 1st Canadian and 2d English armies and had brought that of the 1st and 3d American armies to a halt and so strengthened itself that it was able to determine the course of events at points of main effort.

Two important prerequisites for these successes had, indeed, been fought out or fulfilled before—the withdrawal of the German armies from southern and southwestern France and the maintenance of the German combat power on the right wing of the German western front. Both these events are to be estimated as operational successes. At the beginning of September, the vast withdrawal movement of the German armies from south and southwestern France was concluded, and the theretofore separated forces, in spite of all attempts on the part of the enemy to surround them and overtake them, were united. A little later, after the breakthrough of the English to Antwerp, the German divisions fighting in Flanders succeeded in freeing themselves from the threat of being cut off and encircled, and in spite of unending air attacks, they got over the mouth of the Schelde with the main forces intact.

This provided the opportunity for establishing a new defense front—which was also deepened toward the rear—on the especially threatened wings of the German army in the west. The beginning of such a front had existed in northern France on several occasions, but it had been necessary to give them up on account of the superior forces of the enemy.

When we look back today to these weeks of dangerous tension in the west, especially the beginning of September, it really seems almost like a miracle that our forces were able to halt the enemy again. It was the time when the Anglo-Americans were triumphantly proclaiming, with all the propagandistic means at their disposal, the imminent collapse of our resistance.

As a matter of fact, on many days around the end of August and the beginning of September one could not really say that there was any actual German front in the west. The desperately fighting army in the west consisted of separate fighting groups, often warding off the enemy with their last ounce of strength, and between them great gaps had been torn in the defenses. Making use of these gaps and thin lines, the enemy was able to push his armored spearheads rapidly eastward, plunge through the Argonne, and cross the upper course of the Meuse. With the main part of his attack echelons, however, he turned northward and pushed his way into Belgium, and around the first of September, as a result of his rapid advances, he had already reached the vicinity of Lüttich and soon afterward the Reich frontier.

An additional factor in the German defense played an important role in these operations—domination of most of the ports on the Channel and Atlantic coast. Adequate garrisons had been left behind at the mouth of the Gironde, at La Rochelle, St. Nazaire, Lorient, Brest, Le Havre, Boulogne, Cape Gris Nez, Calais, Dunkirk, and on the islands in the Channel. They had orders to hold these places as long as possible and to prevent the enemy from being able to use them for his supply service. Simultaneously, they had assumed the mission of splitting the enemy forces, of attracting large forces, and of tying up considerable matériel. It can be said today that they fulfilled this mission to the fullest extent.

To be sure, the Anglo-Americans have gained back nearly the whole of France and threaten our frontiers on the Moselle and

west of Eifel, and have already crossed them in the Aachen area. But it was certainly not their intention to stop right there, just as little as the Soviets, for example, planned to stop on the East Prussian frontier about the middle of August. Their main strategic plan has been frustrated—to render us defenseless by the destruction of our armies in the west and then continue into the Reich area on a broad front. The latest attempt to achieve this objective by means of a large-scale operation by airborne forces has failed with heavy English losses.

As a whole, the enemy finds himself, today, faced with a continuous front which is supported not only by natural obstacles but by permanent fortifications and to which at any time numerous newly organized or reorganized formations can be rushed. Thus, since the end of September 1944, the operations in the west have no longer constituted a war of movement over large areas, but a war of position which presents the difficult task to the enemy of breaking his way through an organized system of positions over a front more than 600 kilometers long.

The present course of the western front is determined over long stretches by rivers and mountainous areas. In the south, it is the western foothills of the Wasgenwald; in the central portion, the Moselle, which is already a large stream at this point, and the Sauer with its deeply cut channel. Farther to the north, the forested heights of the Eifel and Höhen provide a natural basis for the front, and in northern Belgium and Holland the numerous canals and rivers strengthen the German defense in the otherwise open terrain by hindering freedom of movement in enemy operations.

The entire western front, therefore, possesses natural obstacles only a third, perhaps, of which are situated on this side of the Reich frontier. These natural obstacles possess many kinds of advantages in our present operations. In many places they provide protection against enemy tank attacks and surprise operations, and facilitate the movement of forces to the front under cover and the assembly of reserves.

The enemy will always attempt, in a river sector, let us say, to form local bridgeheads and then expand these into operational undertakings, as he did at Nancy, for example. In addition to this, he will always be making the attempt to bypass the natural obstacles and concentrate his forces in a terrain favorable to him. Thus, in the relatively unprotected sector of the western front, in the Aachen area, he has been able to penetrate farthest into the Reich.

The western front, in addition to being protected by natural obstacles, is protected by artificial ones in the rear areas. This is true particularly for the entire area between the Luxemburg and Swiss frontiers. Here, as is well known, strongly fortified lines and zones were established before the war, which run parallel to the former German-French frontier on both sides. But the present operations are being carried on mostly far out ahead of their western forefield. Two older fortifications are situated in front of these fortified zones.

In this connection we must speak a few words regarding older fortifications and their combat value. All the fortifications which often played so important a role in the first World War, as, for example, those of Verdun, are, according to the present conceptions, obsolete and utterly unable to stand up under artillery fire, to say nothing of bombing attacks. They were neither occupied nor armed, and could be defended only as open cities.

East of Belfort and Metz, there extends, as has already been mentioned, a very broad zone of modern permanent fortifications. It is formed, as is known, by the Maginot Line in Alsace and Lorraine, opposite which, on the other side of the Rhine, then along the southern boundary of the Pfaltz and the Saar region, our West Wall fortifications are located. The West Wall continues along the Belgian and finally the Dutch frontier, becoming thinner toward the north, however. Although built before the time of this war and completed at a time before modern assault weapons were in existence, it is, nevertheless, an important support for our fight-

ing forces and has already proved its worth in this respect.

It would be a mistake, however, to believe that German defense was depending on the West Wall and the western fortifications alone. Since it was shown that the fortifications on the Channel could be forced by a superior enemy, complete clarity has existed relative to the fact that there must be coordination between permanent fortifications and mobile operations. Fortifications in themselves constitute no certain guarantee of success.

Our other constructions in the west are also to be evaluated from this point of view. It is no secret that during the last few weeks, in addition to the natural obstacles and the fortified zones that already exist there, new installations, weapons, and field fortifications have been added. In a manner similar to that in East Prussia, in the west hundreds of thousands are busy strengthening and building new field fortifications. In accordance with modern views, the existing fortified lines and zones are being extended to form a network of defense installations in which even deeper penetrations may be halted.

Our defense against the Anglo-Americans, in spite of all natural obstacles and fortified zones, is being conducted not in a passive but in an active manner. It depends by no means on these installations alone but regards them only as a means of support and assistance that can save blood and provide a support for operations. They are, therefore, of particular value to us today, since they allow a thinner occupation of the front and lighten the task of obtaining reserves.

The present western front from Holland to the Swiss border measures some 600 to 700 kilometers. It is only half as long as our former coastal front between the Frisian islands and Brittany alone, a thing which signifies many advantages for us. The fighting on the western front has again entered a new phase. Over broad sectors, mobile operations have again changed into positional warfare. The interior portion of our front has been considerably fortified. To be sure, the enemy has been able to achieve a breakthrough into the area of the Reich at a single place, at Aachen, which imposed a hard task on the Germans at that point; but taken as a whole, valuable weeks of time have been gained in front of our own boundaries. In this period, the necessary measures have been taken and are being taken for increasing our strength in matériel and personnel, which make up for the losses which we suffered in the heavy August fighting.

The United States Navy in This War

Digested at the Command and General Staff School from an article by Commander Kenneth Edwards, Royal Navy, in *The Navy* (Great Britain) November 1944.

JUST over a year ago Admiral Nimitz said that the United States Navy was going to cut a line straight through to the China coast. The Gilberts, the Marshalls, and the Carolines have been virtually cleared of the enemy, and the great assault has just started upon the last and most formidable obstacle, the Philippines.

It is difficult for people in England, used to short distances and small areas, to realize the extent of the achievement of the American Navy. In less than two years it has reclaimed more than ten million square miles of the Pacific which had been overrun by the Japanese. Those ten million square miles of the Pacific were not composed entirely of ocean. Among them are dotted hundreds of large islands, a great many of which had been made into important Japanese bases, and many thousands of atolls. And across that huge area, and threatened by islands and atolls so long as they were held by the enemy, run the vital lines of sea communications which dominate the whole strategy of the war against Japan.

The Pacific war is unlike any other naval war in history. It is predominantly a naval war because the forces engaged are seaborne

and because the objectives are island bases and the security of sea communications, but it is not a naval war in the old sense of the phrase. Rather it is a series of long-range "triphibious" operations in which seaborne troops and aircraft are used as well as surface ships, and interspersed with these operations are sea-air battles such as that of the Coral Sea, which lasted for five days, and in which the surface ships did not exchange a single shot.

The secret of the phenomenal success of the United States Navy when faced with this new and unorthodox type of warfare lies in its adaptability. Faced with new requirements of warfare, it produced new methods and new material, and ever since the dark days when so many ships were lost in stopping the southward drive of the Japanese, the American Navy has always been a jump ahead of its enemies.

The most important development in the Pacific war has been the degree of perfection to which the United States Navy has brought the science of air cooperation, both with ships and with landing operations on hostile shores. Nearly all the air power used by the American Navy in the Pacific has been carrierborne, and the Americans have shown themselves capable of operating this arm in such a way as to provide a sustained air offensive over a period of several days and nights. At Palau, the air assault was kept up for two days. In assaults on Saipan, Guam, and Tinian, which were carried out simultaneously, the carrierborne aircraft kept up the work from 10 June till 3 July. There were lulls in this period, but they were short and they were not dictated by any inability to sustain the assault. Nor has assault upon island bases or attack on enemy ships whenever they show themselves at sea been the only duty of the United States Naval Air Force in the Pacific. It has had tremendous commitments in escorting work, for the convoys bringing the supplies to the combat areas have immense distances to cover, and there is possibility of attack by raider or submarine throughout these long voyages.

To meet the special requirements of the Pacific war the American Navy developed the technique of the task force. The task force is, to all intents and purposes, a fleet—but it is not a fleet as one understood the term before the war. It is a highly specialized team, especially formed in order to carry out some specific task. Its components, therefore, will vary with the task to be carried out. The American task force which assisted in the invasion of Sicily, or that which worked so well off Normandy, were different in size and composition from the famous Task Force No. 58 which has for months dominated the war in the Central Pacific.

Just as the role of naval aviation has expanded steadily as the tempo of the war in the Pacific has accelerated, so the tremendous hitting power and bewildering mobility of the task force has increased. The task force fights afloat, in the air, and ashore. Moreover, it has along the long lines of communication back to the supply base a constantly shuttling service of supply convoys and reinforcement convoys, all working under their own surface and air protection. Thus the big task force of the Pacific is a self-contained unit, capable of operating thousands of miles from its base for an extended period, and of continuing to hit the enemy without giving him time to recover, relieve, reinforce, or regroup.

Naturally a task force which is to operate in waters in which the enemy main fleet might conceivably appear is strong enough to deal with such a threat and fight a full-scale naval battle. Such a battle is always hoped for, but is recognized as unlikely and is therefore a subsidiary to the main work which the task force is called upon to undertake. Here lies the fundamental difference between the task forces of the present and the fleets of the past. The latter were in composition and training designed to fight a fleet action, and other operations were subsidiary to this because it was universally believed that they would be impossible until such time as the enemy fleet had been brought to action and defeated.

There has been only one orthodox facet of the war in the Pacific. That is the steady

war of attrition being waged by American submarines against Japan's shipping resources. Up to August of 1944, American submarines had definitely sunk 706 Japanese ships.

The achievements of the United States Navy in developing special technique for the requirements of the Pacific war have been tremendous, but they have been possible only because of the enormous expansion, both in material and personnel, which lies behind them. At Pearl Harbor the American Navy had one-third of its battle fleet put out of action. Of 202 Navy aircraft on the island, only fifty-two were left fit to fly.

Not only has all that damage been made good but the American Navy, and particularly its air arm, has expanded to immense proportions. Five new battleships—all of them over 40,000 tons—have been put into service. So have at least thirty-nine cruisers, ranging from the 27,000-ton *Alaska* class to the 6,000-ton *Oaklands*. As for the smaller type of vessels, suffice it to say that no fewer than 306 destroyer escorts were put into commission in the last eleven months of the past year. This is a fact which should bring home to us the degree of effort which the United States Navy has devoted to the defeat of the U-boats in the Atlantic in addition to its vast commitments in the Pacific war.

Naturally enough, it is in aircraft carriers and in naval aircraft that the greatest expansion has taken place. At the time of Pearl Harbor the American Navy had seven aircraft carriers in commission. It now has a minimum of seventy-five, including the smaller carriers which the Americans call CVE's and we call assault or escort carriers. Since the outbreak of war in Europe the American Navy has taken delivery of 57,600 aircraft.

Material expansion is, however, only one side of the picture. At the time of Pearl Harbor the strength of the American Navy was 325,000 officers and men, and that was after one year of considerable expansion. By the end of this year [1944] the American Navy will have a strength of 3,200,000 officers and men, and provision has already been made for still further increase.

In a service which has expanded so rapidly and which has had to evolve new material and new technique it would not be surprising to find a tendency to cast out all the old ideas without first putting them to the test of new conditions, but that is not the case. Theorists are forever preaching that the day of the battleship is done, and they are not slow to point to the way in which America has used seaborn air power in the Pacific in an effort to prove their theories. They find no support in the American Navy or in its building program. Certainly Task Force 58 could not have carried out more than a fraction of its exploits had it not had a battleship strength which was ample to match the Japanese battle fleet in case it should be met. Moreover, the American Navy had had proof of the use of battleships in "triphibious" operations. That proof arose out of the bombardment of Henderson Field on Guadalcanal Island by the Japanese battle fleet. The bombardment came close to leading to the recapture of the all-important airfield by the Japanese and disposed utterly of the time-honored theory that the guns of battleships are useless against shore targets. Since then American landings have been preceded by heavy gun bombardments as well as by air bombardments, and there is no doubt that this technique has ensured success and reduced casualties in the landings.

In dealing with the achievements of the United States Navy in this war the focus is necessarily on the expansion of that Navy and its conduct of the war in the Pacific, but one should not forget that the American Navy has given excellent account of itself in the Atlantic and in the European theater of operations.

Moreover, when British battleships were needed in the Mediterranean and the *Tirpitz* and *Scharnhorst* were still dangerous in the far north, an American task force temporarily reinforced the British Home Fleet. Similarly, British naval units reinforced the American Navy when the U-boats were taking such heavy toll of shipping off the United States Atlantic coast and in the Caribbean

Sea. The British aircraft carrier *Victorious* also operated with an American task force in the Pacific, as have ships of the Royal Australian Navy and the Royal New Zealand Navy. Between the navies there is a cooperation closely akin to the cooperation within an American task force—in fact, one may regard the navies of the great maritime powers as the ultimate development of the task force for victory in both hemispheres.

The Bobruisk Operation

Translated and digested at the Command and General Staff School from a Russian article by Colonel P. Boldyrev in *Krasnaya Zvezda* (Red Star) 28 September 1944.

THE Bobruisk operation was one of the most skilful and instructive in the series of brilliant operations which resulted in the complete rout of the central group of the German Army in the summer of 1944.

After suffering a great defeat on the Sozh River, the German troops were pushed over the Drut River with heavy losses. In February 1944, they had established their defensive positions on the approaches to Bobruisk.

The Bobruisk area was to be, in the opinion of the German command, an insurmountable barrier on the way to Brest Litovsk. The 9th German Army, under the command of General of Infantry Jordan, was detailed for the defense of this big stronghold. This army was composed of twelve infantry divisions, one tank division, and a great number of reinforcing units.

Around Bobruisk, the Germans had erected five continuous defensive lines, and their total depth varied from 100 to 110 kilometers. The first and strongest defensive line had five and in some places six continuous trenches connected by numerous communication trenches. In front of the forward edge and between the trenches, the Germans laid numerous mines and erected wire entanglements and tank obstacles.

Bobruisk, as well as most of the large populated places in its vicinity, was transformed into a fortress. In addition to the outer and inner defensive zones, all the houses and cellars in the outskirts of the city were made into machine-gun nests. Stone fortifications and barricades were erected in the squares and streets.

The troops participating in the Bobruisk operation were commanded by Army General, now Marshal of the Soviet Union, Rokossovskii.

It was decided to breach the German defense (1) north of Rogachev, where our troops had established a bridgehead on the western bank of the Drut, and (2) to the south of Parichi (see sketch). Then they were to encircle and destroy the enemy by strong attacks on narrow fronts in the general direction of Bobruisk-Glusha.

After a careful preparation, the troops of the First Belorussian Front started a determined advance at 0600 hours on 24 June. Under cover of strong artillery fire (the operations of our air force during the first part of the day were limited because of bad weather conditions), our troops crossed the Drut north of Rogachev and engaged the enemy along his forward edge. With strong fortifications and elite troops at their disposal, the Germans offered stubborn resistance.

South of Parichi, General Batov and General Luchinskii, employing the units on their adjacent flanks, broke through the enemy defense on a thirty-kilometer front and, having captured all five trenches of the first line, deepened the breach about ten kilometers on the very first day of the offensive.

At 1800 hours, the tanks of General Panov entered the breach to exploit the initial success. Pounding the enemy artillery and reserves, they penetrated into the hostile dispositions at a depth of twenty kilometers and captured Gomza. The commander of the 41st German Tank Corps, General Hoffmeister, tried, with the aid of the reserves drawn from the sector of Parichi, to restore the situation in the breakthrough area, but did not suc-

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ceed. The Germans began withdrawing to the north.

On 25 June at 1630 hours, the troops of General Pliev entered the breach which had already been deepened and widened toward the flanks. Advancing to the northwest, they smashed the rear installations of the enemy and by the end of 26 June came out in the vicinity of Glusk, thus cutting all German communications to Bobruisk from the south and southwest. Exploiting the success of General Pliev's troops, our infantry and tanks operating along the western bank of the Berezina River launched an attack to the north and, knocking out small enemy groups, reached the approaches to Bobruisk. The tanks of General Panov struck at the Miradino station, bypassed Bobruisk from the west, and by the morning of 27 June reached the Berezina River north of the city, having cut all enemy routes of retreat to the west.

While the southern group of our troops routed the enemy west of the Berezina River and reached the outskirts of Bobruisk, strenuous battles were still raging north of Rogachev. The Germans, in spite of their difficult situation around Bobruisk, resisted stubbornly and counterattacked. For two days the fighting did not stop for a single minute. Our aircraft, taking advantage of the improved weather conditions, attacked the enemy incessantly.

In the morning of 26 June, the tanks of General Bakharov attacked from the Dobysna River. By a strong attack on a narrow front, they breached the enemy defenses and rushed to the west. On the way, they routed hostile infantry, trains, artillery, and tanks, and by the evening cut the highway between Mogilev and Bobruisk and captured the village of Startzy. Then, turning southward, they came out, a few hours later, near Titovka, two kilometers east of Bobruisk, after having cut all the roads leading to the city from the east. In the morning of 27 June our infantry joined the tanks.

Defeated German units and isolated groups, trying to escape final destruction, were withdrawing toward Bobruisk.

Thus, on 27 June, in their relentless offensive, our troops breached a strongly fortified enemy defense on its flanks and, using mobile units on a large scale, completed the encirclement of the German troops in the vicinity of Bobruisk on the fourth day of the offensive. This was the beginning of the "Bobruisk trap" which closed around tens of thousands of German men and officers and great quantities of supplies and armament.

To continue the rapid advance to the west, this encircled enemy group had to be liquidated as quickly as possible. The troops of General Romanenko and part of the troops of General Batov were charged with this operation, while the bulk of the front forces began advancing toward Minsk and Slutsk.

The liquidation of the surrounded enemy group in the Bobruisk area began on 27 June, immediately after the completion of the encirclement. By a strong blow struck by our tanks at the northern outskirts of the city and the action of a force landed by our river flotilla in the southeastern outskirts of Bobruisk, the enemy group was split into two parts: one group defended the city proper, while the other fought southeast of the city. All crossings on the Berezina River connecting the two groups were blown up.

Then our troops began wedging in and splitting the German defenses. However, our troops made but little progress during this day. The enemy offered desperate resistance, conducted strong mortar and artillery fire, and often launched counterattacks.

On 27 June, Lieutenant General Lutzoff, commander of the 35th German Corps, decided to fight his way out of the encirclement by mounting a strong attack to the north along the Berezina River.

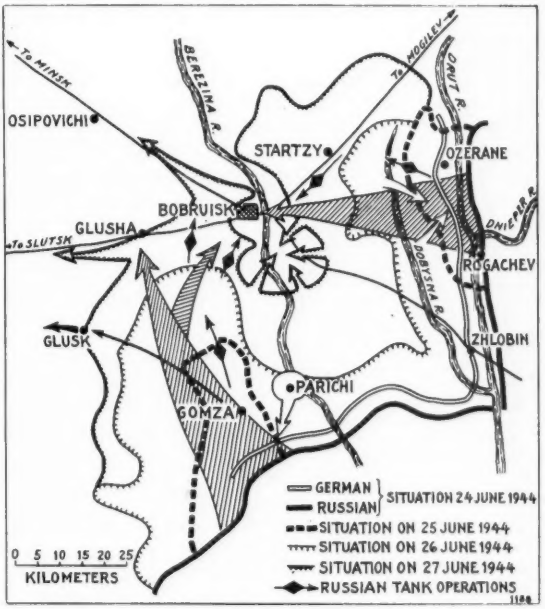
Beginning at 1200 on 27 June, detonations were heard and large fires were observed in the dispositions of the encircled enemy. The Germans were blowing up their matériel, burning vehicles, and killing horses. At 1600 hours, in the woods southeast of Bobruisk, our aircraft observed a large concentration of German infantry, about 150 tanks, more than 1,000 guns, and about 6,000 vehicles. In an attempt to fight his way out to the north, the enemy launched, during this single day,

fifteen counterattacks against our tanks at Titovka. All this clearly indicated that the Germans were preparing to break out of the encirclement on the night of 28 June.

In order to prevent them from carrying out their plan, the front commander ordered his air force to attack the enemy immediately. In the evening of 27 June, more than 500 of our Stormoviks [attack planes] and bombers subjected the enemy to bombing and strafing attacks which lasted about an hour. The aerial blow was followed by the attack of our infantry and tanks. The Germans began to surrender. By 1300 of 28 June, the enemy group east of the Berezina River had been fully liquidated.

In two days of fighting, 10,000 Germans were killed and 6,000 surrendered. Our troops captured 4,000 vehicles, 432 guns, twenty ammunition dumps, and other armament.

Furious battles were still raging around the city. The German garrison of more than 10,000 men, under the command of the commandant of the city, Major General Haman, resisted desperately behind the fortifications erected around the city.



On the night of 28-29 June, the commandant of the city, at the order of the commander of the 9th Army, attempted to break out of besieged Bobruisk. He concentrated large infantry forces with tanks in the northwestern part of the city and tried to break through our defenses north of Bobruisk in order to retire along the highway to Osipovichi.

At 0130 on 29 June, after a strong artillery and mortar preparation, the German soldiers, following skirmish lines composed of officers, launched an attack, but did not reach the forward edge of our defense. They fell under the devastating fire of Soviet artillery and mortars which had been brought up here in time to help our infantry. The enemy attack petered out. Having left more than one thousand killed on the battlefield, the Germans returned to their position of departure.

At 0200, the attack was resumed. The German soldiers and officers, all of them drunk, rushed forward despite the devastating fire of our artillery and machine guns. For an hour our men were repelling furious assaults by the maddened foe. This time a small part of the enemy troops succeeded in reaching the highway, while the rest returned once more to the city.

Our troops advancing from the east took advantage of the battles fought in the northern outskirts of Bobruisk, crossed the Berezina under the cover of darkness, and broke unexpectedly into the city at 0400. The troops of General Batov launched the assault on the city from the west and south. By 1000, the enemy garrison was completely destroyed and Bobruisk became a Soviet city.

The German group which had succeeded

in breaking out from the city to the north was soon surrounded again and liquidated by our troops. Among the captured prisoners were the commander of the 41st Tank Corps, Lieutenant General Hoffmeister, and the commandant of the city of Bobruisk, General Haman.

Tremendous losses were inflicted on the enemy during the six days of strenuous battles. There were destroyed 216 tanks and self-propelled guns, 1,322 guns, 1,370 mortars, 3,660 machine guns, and 8,360 motor vehicles. About 50,000 Germans were killed, and 23,680 men and officers were captured.

As a result of this brilliant operation the bulk of the 9th German Army was completely routed and favorable conditions were created for a rapid advance to the west.

Characteristic of this operation is the boldness of its conception. Strong shock groups on the flanks, each with a great number of tanks, secured not only the breakthrough but also its exploitation and the rapid encirclement of the enemy.

The success scored by our troops south of Parichi was continuously exploited from the very first day mainly by the efforts of the mobile units. Their rapid advance prevented the enemy from undertaking any serious countermeasures against the attacking main forces. Our tanks, boldly breaking into the depth of enemy dispositions, disorganized the German defenses and disrupted their lines of communication and control. While the infantry was still fifteen kilometers away (on the right flank it was forty to fifty kilometers from Bobruisk), our tanks broke into the city and completed the encirclement of the German troops. Yet the high skill of the tank troops in this operation expressed itself not only in attack but also in defense. In the vicinity of Titovka and north of Bobruisk, our tanks repelled many attacks by German infantry and tanks and thus contributed to the complete rout of the encircled enemy.

One night our tank troops managed, within a few hours, to dig all their tanks into the ground and carefully camouflage them against ground and aerial observation. The infantry which followed the tanks protected them by submachine-gun fire against the attacks of hostile infantry.

During the period of artillery preparation, our artillery, using massed fires in support of the main attack, neutralized the enemy defense and thus secured the rapid advance of our tanks and infantry. During battles in the depth, the artillery used fire and maneuver extensively and secured the commitment of mobile units.

The operations of our air force consisted mainly in supporting the attack of the tanks and infantry. Our aircraft neutralized and destroyed the enemy forces in front of our attacking troops, and only part of them attacked the nearest communication centers and German reserves.

The air force was also skilfully employed in the encirclement operation. The enemy was subjected to intensive bombing and suffered heavy losses, and his defense was so weakened that he was easily and quickly liquidated.

The sappers were of great assistance to our attacking troops. At night, under uninterrupted enemy fire, they built several crossings across the Drut, including a heavy bridge for tanks. Moving with the battle formations of the mobile troops, the sappers rapidly cleared mines from roads and bridges and restored damaged crossings.

Our reconnaissance accomplished its mission in an excellent manner. At the beginning of the operation, the Soviet command was supplied with precise information as to the disposition of the enemy, the boundaries of his units, and the location of his reserves. This facilitated the planning of the operation and insured the success of our troops during the attack.

Finally, of decisive importance to the operation was the element of surprise. The enemy did not know in what strength, when, and in what direction the blow would be inflicted. Misled by a number of feints, he expected our main attack in the sector Rogachev—Zhlobin. There he concentrated his main forces, which were soon annihilated in the "Bobruisk trap."

Where Are Our Fighters?

An article by Group Captain J. T. N. Stephenson, Deputy Director of Operations (Tactical), in *Royal Air Force Journal* (Great Britain) March 1944.

The question "Where are our Fighters?" has been asked not only by soldiers but often by airmen in practically every land campaign yet fought. The explanation of why fighters are not always visible during battle will be found in an understanding of the basic principles governing the operation of fighter aircraft and of the principles of tactical employment of a fighter force. The object of this article is to give a brief and simple outline of these principles.

IF any fighter protection at all is to be given to land forces, it is essential that an adequate number of fighters should be available. It is also essential to have sufficient bases from which these fighters may operate and which are near enough to the scene of operations to enable aircraft to fight without risk of running short of fuel.

Unfortunately, it does happen that sometimes, for urgent reasons, land forces are committed to action within range of enemy aircraft without these two essentials being fully provided for. When that occurs, the answer to the question "Where are our fighters?" will be obvious to you—even though the necessity which makes it obvious may not be!

Let us consider what will, we hope, be the more usual case in these happier days—the case in which the two foregoing essentials are fulfilled and in which the commanders and the newspapers praise the air cooperation and yet, in spite of this, *you have seen very few fighters*, and have, perhaps, even been bombed or strafed by the enemy.

Defensive Operations

In support of an army, as in pure air operations, fighter units may be used either defensively or offensively. From the nature of the fighter aircraft itself there will always be a bias towards offensive employment, while a reasonable reserve is held either at readiness on the ground or deployed in the air to ensure the security of the bases from which the army and air force operate. In the field, both types of operation overlap to a large extent and cannot easily be separated, but, whenever possible, it is the aim to obtain the defensive result by placing the emphasis on offensive action. Consequently, when planning an operation, the planning staff should endeavor to leave the RAF as free of purely defensive commitments as possible.

The aim of defensive operations is to protect our land forces, our headquarters, bases, and installations, our airfields, and our ships.

To do this, even by the adoption of purely defensive tactics, fighter aircraft may have to operate over a wide range of country and throughout a wide range of altitude, and the more the defensive object is attained by employing fighters in offensive action, in which role their full striking power may be exploited, the truer this becomes.

Defensive fighter operations embrace any form of protective fighter cooperation, and, broadly speaking, defensive protection may be given in three alternative ways:

1. *Fighter Watch.*—Special vigilance by that part of the fighter defense system responsible for the protection of the area or object concerned. While maintaining fighter watch, aircraft are not necessarily, in fact not usually, airborne.
2. *Fighter Cover.*—Maintaining air superiority over a given area between given times, either by defensive patrols (the so-called "fighter umbrella") or more usually by offensive operations, such as fighter sweeps, or attacks on enemy airfields, or by other diversions designed to draw off or neutralize the enemy fighter force.
3. *Fighter Escort.*—Direct protection by fighters flying in the vicinity of the forces for which escort is provided.

It will be clear from these three alternatives that, although fighter protection has been provided, except in the case of "fighter escort," it is unlikely that fighters providing

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the protection will be seen by our soldiers or airmen on the ground within our lines.

It is possible that even where fighter escort is provided, the aircraft providing the cover will be so placed and at such a height that they will rarely, if ever, be seen by the forces they are protecting, except when intercepting enemy aircraft attempting to break through the protective screen.

Offensive Operations

The primary aim of offensive operations is to destroy enemy bombers and fighter bombers before they can attack their objectives. But this is not all; offensive operations also include destroying enemy fighters, establishing moral superiority over the enemy air forces, maintaining local air superiority so that our bomber and reconnaissance aircraft may carry out their tasks unmolested, and achieving the destruction of enemy transport and personnel by ground attack.

The ultimate aim of all but the last of these different operations is to gain air superiority. If these operations are successful in attaining this end, a high degree of protection will inevitably be given to our land forces. The more successful they are, the less necessary will it be to provide fighter protection by committing fighters to purely defensive operations.

Types of Offensive Operations

The types of offensive operations in which fighters take part to obtain air superiority are many and various. They include:

1. Attacks by bombers, escorted by fighters, primarily to bring enemy fighters to action.

2. Attacks by bombers, escorted by fighters, primarily to destroy a target. Where this target is intimately concerned with the maintenance of the enemy air effort, this form of operation contributes directly to gaining air superiority. Where the target is a military one, the operation is directed towards immediate furtherance of the land fighting, i.e., in direct support.

3. Fighter sweeps without bombers to provoke combats with enemy fighters and to establish a moral ascendancy over the enemy, while, at the same time, raising the standard of training and morale of our own forces.

4. Small-scale attacks by fighters, using cloud cover and surprise, the objectives usually being enemy aircraft or other worthwhile ground targets. The objects which these operations are intended to achieve are again both moral and material.

Operational Preparedness

You will find it helpful to understand what is meant by "operational preparedness." Once understood, it becomes a simple matter to appreciate how aircraft are held available for immediate operations and why aircraft do not necessarily have to be in the air to be capable of providing assistance at short notice.

When fighter squadrons are not airborne, it is a standing rule that they should always be at one of the following states of availability:

Standby.—A fighter unit at "Standby" must be ready to leave the ground in two minutes. Pilots are to be in cockpits, starters connected and engines warm, but not necessarily running.

Readiness.—A fighter unit at "Readiness" must be in a position to leave ground within five minutes. Fitters are to be prepared to start engines; pilots are to be in flying kit in the pilots' room or in the vicinity of their aircraft. The aircraft are to be in position on the airfield ready to start up.

Available.—A fighter unit at "Available" must be able to leave ground in fifteen minutes. The aircraft are to be ready to start up, and the pilots in the vicinity of the pilots' room or in aircraft when dispersed. Pilots need not be dressed in flying kit.

Available thirty minutes.—A fighter unit at "thirty minutes available" must be able to leave the ground in thirty minutes. The pilots need not be in the vicinity of the pilots' room or aircraft.

Released.—A fighter unit at "Released" will not normally be required for duty until the end of the period specified in the release order, when it will return to the state of

"Available." A unit on landing from patrol is automatically at "Released" while refueling and re-arming, but, in the absence of further orders, will return to "Readiness" as soon as these operations are completed. "Released" does not mean that squadron personnel may leave the airfield unless specific permission to do so has been given.

Conclusions and Limitations

Now that the nature of fighter operations and the various states of availability of fighter units have been explained to you, you will be able to appreciate that while undertaking the majority of offensive operations or while providing protection by their state of readiness, fighter aircraft will not be within view of the ground forces when they are protecting or standing by to protect. You should also be able to understand that it will never be possible to guarantee that isolated enemy air attacks cannot slip through the protective screen, when provided, or that some part of the enemy air forces do not escape offensive operations designed to pin them to the ground or to destroy them.

It will also be apparent that only in the more exceptional cases, such as the provision of local fighter cover or the close intervention of aircraft in the immediate neighborhood of our own troops, may land forces expect to see any part of the fighter effort being made on their behalf. At the same time, it is fully understood by the air force that the close intervention of aircraft in the neighborhood of our land forces provides considerable moral encouragement and there may be many occasions where such intervention is desirable, even though it may not be the most effective means of employing our air power. Such cases will, however, normally only occur in emergencies or where particularly profitable targets present themselves in the immediate neighborhood of land forces.

You will realize, of course, that it is the first task of our air forces to prevent such emergencies from arising, and hence to obviate the necessity of intervention in the immediate neighborhood of our own lines. Moreover, targets in the immediate neighborhood of our own troops would normally be more effectively (if not so spectacularly) engaged by artillery.

The Ultimate Aim—Air Superiority

All this is just another way of saying that if our air force is successful in attaining its main aim of establishing air superiority in the battle area, the operation of fighter aircraft immediately within that area should be unnecessary. At the same time, the more successful the air force is in attaining this aim, the more freely will reconnaissance aircraft and support bombing aircraft be able to operate against military targets within and beyond the battle area in direct support of our land operations, so that while you may see few fighter engagements, you may well see a great number of other friendly aircraft in transit overhead.

Once again it should be emphasized that, even in the most favorable air situation, the opportunities presented by weather conditions and by the three-dimensional freedom of action of aircraft must always be expected to provide the enemy with occasional opportunities of slipping through to attack us on the ground. It will never be possible to guarantee complete freedom from such attacks, but the greater degree of air superiority we can obtain, the less frequent will they be, and, remember, air superiority is not gained by air operations in the immediate vicinity of our own land operations.

One should make use of the defensive, which has a negative aim, only when one must resort to it because of weakness; but it must be abandoned as soon as one is strong enough to conceive the positive aim.

—Clausewitz

The Australians in the New Guinea Campaign

Digested at the Command and General Staff School from *The Australian Army at War*, a pamphlet published by the Director General of Public Relations under the authority and by direction of the Commander in Chief, Australian Military Forces, 1944.

OTHER than Milne Bay, Moresby was our only important foothold in New Guinea and our only base for effective resistance and the development of the ultimate offensive.

Our troops had to learn, the hard way, to beat the Japanese and to prove themselves the more expert jungle fighters.

They met an enemy at least three times their own weight, yet for more than a month, without any support other than air strafings at the enemy's beachhead and at his inland line of supply, they held up a drive which could have brought the Japanese swarming into Moresby.

This line of the enemy's projected advance was a tract from Buna to Kokoda and the little known but difficult trail from Kokoda across the Owen Stanley Range to Moresby. A small advanced party of the first Australian force arrived at Buna on 21 July 1942, while the Japanese were landing 1,000 troops at Gona, eight miles to the west.

On 23 July began the long fighting withdrawal over the Owen Stanleys. This limited force, in ambushes and desperate stands, killed many more than it lost, but always it had to give way to the tremendous weight of the greater Japanese numbers.

The force lost at Kokoda the valuable airdrome, but attacked and regained it, only to be driven out by overwhelming pressure on 10 August.

Fresh Australian troops were coming in after the heartbreaking march through the Owen Stanleys, and were being organized for another attack on the Japanese garrison at Kokoda.

The first unit of our reinforcement brigade began its march into the hills from Port Moresby on 16 August. They had to do what white men had not previously done in New Guinea—carry loads of sixty to ninety pounds each as they crossed the trail.

Behind them there was no continuing supply line. Transport could not be used a few miles beyond Moresby. There were no landing strips through the mountains where planes could be put down, and indeed there were comparatively few planes available. The technique of dropping supplies from the air had yet to be perfected, and so troops depended on what they carried themselves and what could be brought up by native boys.

From 26 August this new brigade was committed, company by company, in an attempt to stem and turn the drive which the Japanese had heavily reinforced within the previous fortnight, and so the withdrawal went on.

Withdrawals by Australian troops in this war ended on 11 September.

The doctrine of offensive action was becoming paramount to the Australian Army, and whatever the cost, the enemy had to be defeated. Supplies would be got through somehow. Given the re-occupation of suitable landing grounds, reinforcements would be flown in and casualties would be flown out, and the exhausting travel over the trail would be eliminated.

But the nearest strip that could be used for this purpose was at Kokoda, so while the enemy dug in on Eoribaiwa Ridge, the Australians began their preparations to drive him into the sea, or to kill him.

Between Eoribaiwa Ridge and Port Moresby, and so to the Australian mainland, there was little to deter the Japanese. And so Eoribaiwa Ridge became the milestone of the Pacific theater, to mark the end of Japanese aggression and the inauguration of victory in the Pacific.

The American Air Forces were to play an important role, particularly in the later weeks while the Japanese were being pressed back down the northern side of the Owen Stanleys.

In the meantime, the Australians began to

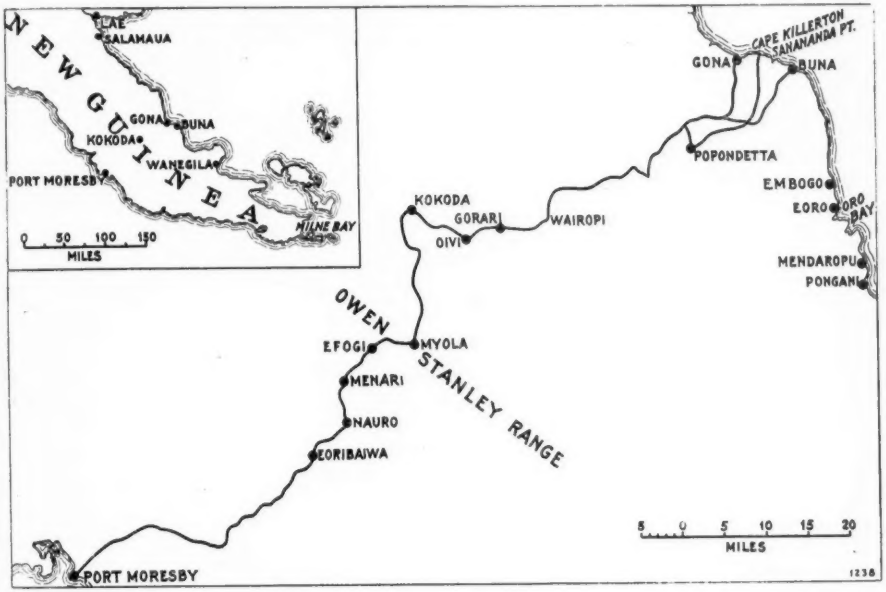
drive the Japanese back over their tracks and to exact a vengeance numerically out of all proportion to the losses which we had suffered. At Eoribaiwa Ridge the Australians began their offensive. Fresh troops were now available, and they had the support of two 25-pounder guns, the use of which introduced an element of surprise of incalculable value, for this was the first artillery we had used in the mountains.

In the period of final preparation for our attack, patrols harassed the Japanese, killing off at least two hundred in a week. Then, with the offensive under way, the Japanese panicked out of his positions at Eoribaiwa Ridge on 28 September, and our advance parties were in Nauro two days later.

From Nauro onwards the newly developed system of dropping supplies from airplanes was developed. The damage and consequent wastage was high, and often we were down to one day's supplies. With Menari and Efogi in our hands, the program became the capture of Myola, a suitable dropping ground, where supplies were dropped in advance of our actual occupation.

There was heavy fighting and some severe casualties before the enemy's main screen in defense of Kokoda was dug out and destroyed with the bayonet. Kokoda fell to us on 2 November.

The "front" now spread over three miles,



and the Japanese had further reinforced his troops, but here we trapped the Japanese, forced him out of his positions at Oivi, denied him escape down the easy track to the coast, and dictated that the only remnants of his garrison who escaped were those who made their way over the rugged jungle country to the northeast. One of the fiercest and swiftest actions fought in the New Guinea campaign was that of Gorari, which ended in complete defeat of the Japanese. The final count on 13 November showed our losses five officers and seventy-five other ranks, and the enemy's 580 of all ranks killed, but many more Japanese were lost in the jungle to which they tried to escape.

Information which we obtained later showed that before the fall of Kokoda the enemy had lost from two battalions 1,185 of all ranks.

The survivors fled across the river towards Buna. In the crossing, their commander, General Horii, was drowned.

In the meantime, the command had been preparing to clear the Japanese out of Buna, Gona, and Sanananda. While the Australian troops were coming down through the Owen Stanleys, the first direct move against the north coast was undertaken by a battalion of Australian troops who had been stationed at Milne Bay.

On 5 October this battalion began to put into effect its program of seizing an airplane base at Wanegila. From this point a force was to make its way along the north coast to direct an attack on the beachheads. It took two days to get this battalion and all its gear from Milne Bay to Wanegila, the first occasion on which a complete battalion of Australian troops was transported by air. By 7 October the defenses of the strip and on the beach were complete, and Australian infantry were improving the airfield. They had a new strip ready for use by 13 October.

American troops were then shifted into the area by air, the movement continuing until 17 October. During its progress, Australian commandos and patrols of American troops were throwing out feelers towards Buna.

The original program of moving across country had to be abandoned because rains and floods made the country impassable. Instead, small boats were used and a small force transported in these seized Pongani. The American force established its headquarters at Mendaropu, a few miles beyond Pongani, towards the end of October. From there, American and Australian patrols probed deep into the Japanese area. Presently this force moved westward along the coast, establishing headquarters at Oro Bay, Eoro, and at Embogo.

First contact between the American troops and the Australians who had come through the Owen Stanleys was made at Popondetta, which was soon to become an important terminus for air transport. One Australian force was directed against Gona, while the other followed the winding trail which led to Sanananda.

In this general area of Gona-Buna-Sanananda, the Japanese had built a maze of earthworks and pillboxes, in the construction of which he had used coconut palms. Trunks up to a foot in diameter formed cover for strongposts which were able to stand hits even from 25-pounders, and in these posts, cunningly placed to give strategic lines of fire, the Jap sat for weeks. He crouched in his post for twenty-four hours a day—ate, drank, and slept in a filthy pit only a few feet square. He obeyed his orders to "Stay there," but rarely showed initiative to adjust himself to changed conditions. He rarely attempted to gain ground. His orders were based on the realization that his main strength lay in maintaining perimeter defenses. Reliefs, ammunition, and stores were brought to him along a maze of communicating trenches about four feet deep. He was living underground and fighting from almost impenetrable strongposts.

The main assault on the beachheads began on 19 November. Australian troops were allotted the task of taking Gona, and then pushing on to Sanananda. The Americans were to attack Buna. The task was to be facilitated by the aerial delivery of jeeps and 25-pounders, although the work of the artillery was most difficult, as in places only fifty to a hundred yards separated the forward troops of both forces.

The Japanese had no intention of abandoning their strongholds, and at night were reinforcing their garrison by barges staged down the coast. These barges were engaged by the newly arrived artillery, sometimes 500 rounds being fired intermittently in a night. At the same time, increase in Allied air strength had been marked, and aerial attacks on the Japanese positions reached proportions unprecedented in the campaign.

Fresh Australian troops assured the fall of Gona on 1 December. Then followed the battle for Gona Mission, for its size the most

severe of the whole campaign. Its capture was completed with hand-to-hand fighting on 9 December.

Simultaneously with the Australian attack on Gona, the Americans had launched attacks on Buna, supported by Australian bren carriers. They defied a maze of pillboxes in the coconut plantations, which closed the coastal strip leading on to Buna. Other Americans had pushed up the Buna track and dug in within a thousand yards of Buna village.

Buna fell on 28 December, and only Sananda remained to be cleared, but this proved the most difficult of all. The Japanese had been able to reinforce and maintain supplies by barge, despite sustained air and sea attacks.

The area from which the enemy had to be cleared at Sanananda was roughly in the form of an elongated triangle with Cape Killerton to the west and Sanananda Point to the east forming a two-mile base. The Japanese depended largely on swamp country to protect him on the western side, concentrating his defense on the dry ground along the track on the eastern side.

The Australian troops with American troops under command took up positions together at the track junction, or the apex of the triangle. The American force from Buna was moved west along the coast. The Australian attack from the apex was launched on 12 January 1943. They cleared the track to the south and pushed straight ahead toward the sea. Nearing the coast, they turned east into the Japanese, feathering out to resemble something like a ten-pronged attack, with the north prong pushing rapidly along the coast to Sanananda Point. Americans astride the Sanananda track in the south had been keeping the enemy busy, and he was taken completely by surprise when the Australians appeared, attacking through the swamps and jungle which the enemy had thought impassable.

By 23 January all organized resistance had ceased. Most of the Japanese had perished in the trap, though some small parties managed to escape across the swamps to the west. Outnumbered by at least fifty percent, the Australians and, in later months, Americans, had wiped out the Japanese force of at least 16,000.

The Secret of the Last Phase of the War

Translated and digested at the Command and General Staff School from a German article by Joachim Fernau, war reporter with the Elite Guard, in *Deutsche Allgemeine Zeitung* 30 August 1944.

IN half a year, at the latest, we shall know what only a few know today—that this last phase of the war, which began on 6 June 1944, had a secret behind it, and that the three months, June, July, and August, in truth, were of a very different character from what we all believed they were.

This period that we are passing through is the most dramatic that modern history can ever hope to experience.

Kharkov fell, Stalino, Dniepropetrovsk, Uman, Smolensk, Pleskau, Vitebsk; the Soviets approached nearer and nearer. Kiev fell, Lemberg fell, and they are now before Warsaw, Krakow, East Prussia. Divisions are hurled against them and are forced to fall back—and continue to fall back. Regiments go down; an endless quantity of matériel sinks in the mud. We lack planes, artillery, tanks—something, at last, must halt them! But the following day offers no change. Slowly but surely, the Soviets advance.

In Italy, the abscess that is Nettuno breaks, Rome falls, the English march and march and march, bringing up their fantastic quantities of artillery and planes—and are now in Florence. On 6 June, the invasion begins with a raging inferno of bombs and shells. The English and Americans get a firm hold in Normandy; our counterattacks fail. And without pause, the English bomber arm

rolls over Germany destroying our cities. This is the picture of June and July. We must finally state it in plain words, for it is the truth and to the glory of our soldiers. It is a frightful picture.

But the picture is wrong! If we did not know it ourselves and could not prove it, Churchill himself could best teach us; and he would not hesitate to do so, either, for to him this picture looks materially different. In half a year, moreover, every one will know it.

We see immediately that the concept of time is playing, somehow, a role that we did not know of before. Let us consider the following. England and America began the war in 1939, a year that was as unfavorable as is possible to conceive. Neither country was prepared as yet. The U.S.A. was not far enough along to be able to enter the war officially. Germany's superiority was unmistakable. England was aware of this too, only she did not know its extent. Her calculations were, in truth, wise ones, based on the fact that steps must at once be taken to prevent an early decision. The war must, let come what might, be carried to the phase of general exhaustion, to the phase of final effort. For, in such a case, it will have assumed the character that England and the U.S.A. required, namely, that of a wave motion, an oscillatory character.

The Führer knew this perfectly. He attempted to interfere with this plan, to occupy quickly all the countries that England had placed out ahead of herself for the accomplishment of her purpose and to force a strategic decision in 1940. We came very close to it. But it failed for the reason that the Soviet Union committed the unparalleled act of allying herself with capitalism and entering the war. England then drew a breath of relief. She did not share at all Stalin's belief that he would be able to conquer Germany strategically, yet drew a breath of relief for the reason that the war had now really assumed that wave-motion character on which the English and Americans had built up their entire plan. General "Time" was no imaginary character. He really began his work.

The wave motion became visible now. The Soviet Union was not to be conquered by means of a strategic act, by means of a battle. The war dragged on, time passed, England and the U.S.A. armed themselves, but we, on the contrary, were engrossed with bloody occupation. At the same time we were being continually bled. Our system of war production established in 1939 continued to labor further in the same direction. England, on the other hand, was just now beginning. Her war production began in 1941-1942. The wave motion, whose principle the English have always attempted to follow down through history, completed its first phase—Germany was at the top and the others at the bottom.

And now England rose. That was the second phase. The war began again, so to speak.

In the meantime, the war in Russia and Africa continued as if the Führer were still trying to obtain the decision strategically in the two great theaters of operations by the employment of the old means. Churchill rubbed his hands. The second phase of the war—really, the renewed beginning of the war with the new English and American means—could not help but prove a terrible blow to Hitler. The English nation also was greatly weakened, but now it appeared certain that the end would come at the time when the German war material was exhausted and worn out and by means of the American armament. A new start was being made in the war, in which, to quote Churchill's words, "England was at the top."

In 1944, a terrific attack on Germany began. No one had any doubt of the fact that this was a supreme effort. The English no longer came over with hundreds of bombers, but with thousands. They landed in Nettuno, they fired 200,000 rounds on a single sector in the course of one day. On 6 June, they made the general invasion. In the east, Stalin attacked with all his reserves. It was an imposing picture to the world. But to no one did the thought occur

that the whole thing was very strange and that this sacrifice before the closing of the gate would have been quite unnecessary if things were really as they seemed to be. But things were quite different!

I still remember very well that the terrorists in France last year wrote the following inscriptions on walls: "1918-1943"; 1943 was supposed to be our 1918. Today, I know that that was no propagandistic theory, but a program, that it represented the direst of necessity. Churchill knows how to figure, all right!

Our calculated end from exhaustion should have come without fail in 1943. The year passed. We ourselves did not suspect what that meant to Churchill and Roosevelt. Now there was just one thing left for them to do, to launch a desperate joint attack during the last few minutes of their phase of the war—and that is just what we are passing through now.

If one last proof were needed for this train of reasoning, Churchill himself provided us with it in an interview a few days ago. He said: "We must end the war by autumn, or —"

By autumn! This shows to us why we have had to make this last great effort. And it is not beyond our powers. We have never yet, in this war, given up in a critical situation. We shall also pay the final price that remains for us to pay, with all our means and all our powers. Victory is really very near!

Maneuver of Artillery Groups in Offensive Operations

Translated at the Command and General Staff School from a Russian article by Lieutenant Colonel V. Smirnov in *Krasnaya Zvezda* (Red Star) 26 August 1944.

ONE of the basic tasks of the artillery in the present war is the support of infantry and tanks. Artillery should not only clear the way for the attacking units and prepare them for the assault stage but also constantly accompany them with fire, literally lead them from one objective to the other, and protect their battle formations from the enemy's counterattacks. In other words, the problem of tactical mobility of the artillery throughout the entire offensive operation has become extremely important. The solution of this problem results in the most effective use of the power of artillery fire and its flexible maneuverability; the more important the targets, the greater should be the density of fire. However, the combination of fire and mobility in an offensive operation conducted on a wide front constitutes a most difficult and important problem.

Let us analyze, in this connection, an offensive operation which will enable us to establish some general rules concerning the use of tactical mobility of artillery in combat. Three infantry divisions took part in the attack (see sketch). The army artillery group was composed of gun and howitzer regiments. Their basic mission was a counterbattery action and the destruction of particularly durable trenches and other enemy works.

Our right flank was chosen for the direction of main effort, and therefore the army artillery group was concentrated there. The German fortifications in this sector consisted of three lines of trenches with strong timber and concrete pillboxes. The period of destruction fires began the day before the attack. The fire of the artillery was so successful that, in the course of the subsequent reconnaissance in force, two of our battalions penetrated into the first two enemy trenches, took prisoners, and returned before dawn. The prisoners stated that the enemy expected the attack and considered his right flank and particularly the direction toward a big populated place where he had concentrated his main fire means as the most vulnerable. Our artillery, by the way, was conducting fire of equal intensity along the entire front. Con-

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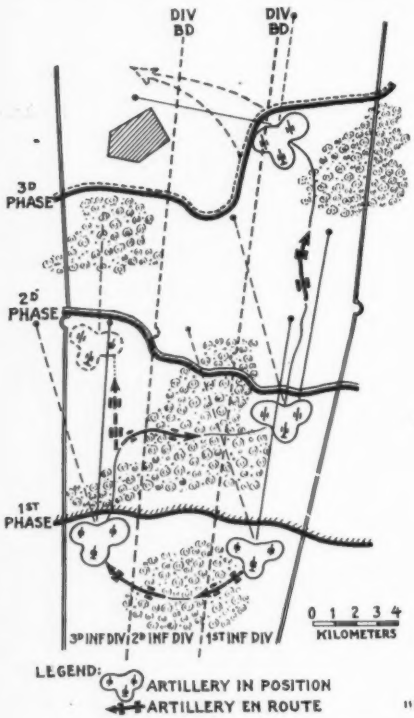
sequently, the Germans had no doubts as to the correctness of their conjecture.

The command of the army, striving to inflict on the Hitlerites a most crushing defeat, made minor changes in the plan of operations. The direction of the main effort remained the same, but the artillery group was moved to the left flank. This movement, carried out under the cover of darkness, took five hours, and by morning the group was ready for action. The sudden commitment in battle of a great mass of artillery was very effective. The Germans suffered tremendous losses, and our infantry rapidly advanced in this sector. Then the artillery was ordered to return to the right flank again, and on the second day of the attack was already operating there, helping the infantry in breaching the enemy's intermediate defense line. In pursuit



of the enemy, the light artillery units advanced, as a rule, ahead of the artillery columns and participated in neutralizing isolated centers of resistance.

By the end of the second day the situation was as follows. The 1st Infantry Division, as shown in the sketch, had advanced farther than the adjacent units and had enabled the artillery to deliver flanking fires on the targets located in and around the populated place. Here the enemy had a strong center of resistance which had slowed down the advance of the 3d Infantry Division. The artillery, operating from firing positions along the boundary between the 1st and 2d Divisions, covered the penetration into the rear of the enemy and the attack of our infantry. The enemy center of resistance was destroyed, and this contributed, in the final analysis, to the successful completion of the army's mission.

Without going into the details of the battle, we shall try to draw some conclusions with respect to the tactical mobility of the artillery. First of all, a few words about the massed use of artillery. The brief description of the battle and the sketch show that the artillery avoided dispersion and operated all the time as a compact unit. This is very important. It allowed the attackers to attain fire superiority anywhere, and each time the action was crowned with success. In most cases, this is the correct way to utilize reinforcing artillery, despite the difficulties arising in the organization of its displacement en masse. These difficulties are fully compensated by the power of the fire concentration which is brought into action according to the plan of the senior commander.

Of course, it would have been possible to site the artillery in the attack zone of the 2d Infantry Division, for example, and from there provide fire support to those units which needed it most. The fire range of the guns was sufficient for this method. However, the fact that this was not done was perfectly justified. Fire transfers would have been only a half-measure for the reason that it was necessary to detail part of the guns for direct firing because the course of the events had

shown that the Germans would not launch a counterattack on this flank, absorbed as they were with the defense of the populated place. That is why it was decided to return the artillery group to the right flank, i.e., the flank which remained the direction of the army's main effort.

When the battle was joined on the third line, the artillery unit moved forward and occupied firing positions along the boundary between the two divisions. Any displacement along the front was not needed. The firing positions were so located that only a slight change in deflection fully secured the support of the units enveloping the populated place from the rear, while the presence of the artillery group at the boundary would contribute to the stability of the infantry battle formations in case of enemy counterattacks.

The displacement of the artillery from the zone of the 1st Infantry Division to that of the 3d Infantry Division did not present any particular difficulties since everything was ready for the attack, the roads were free, and the clear July night did not complicate the traffic problems. It remained only to secure maximum secrecy of the operation. But the return trip was, on the contrary, very difficult. All the divisions were moving. The main roads were full of vehicles and men. The artillery column proceeding from one flank to the other unavoidably crossed the routes of other columns. The staff of the artillery group had to work out painstakingly the schedule of movement and coordinate it with the staffs of all the divisions. The operation required great administrative ability, flexibility of control during the course of the maneuver, and a precise traffic regulation service.

The route of the batteries included roads which were not yet cleared of mines and abatis. A number of Hitlerites still remained in the woods. During this march the artillerymen learned by experience the importance of foresight. They were escorted by experts in mine clearing, and their column was protected by its own submachine-gun and machine-gun groups.

It was not sufficient to arrive at the assigned destination on time. It was also necessary to be prepared for the immediate opening of fire at such targets as the situation might require. The artillery group mentioned above coped with this task successfully, thanks to the activity of its reconnaissance agencies operating far ahead. They used the information about the enemy obtained from the artillery and the infantrymen who had fought in this sector. A net of observation posts was established precisely on the basis of these data. It secured good observation of the country and of the fire activity of the enemy in the attack zone of the supported division and, to some extent, in the zones of the adjacent units. The arriving artillery units were immediately taken to their positions (already surveyed in) and provided with initial data with respect to the main direction of firing and specific targets.

Summing up the experience of the offensive operations described above and of a series of other similar operations, it is possible to formulate the following rules for successful artillery maneuver. No matter how brief the operation, the artillery which is not a part of infantry divisions or corps should be kept in a compact mass and utilized for a decisive intervention in the course of the battle. In some cases, when it is necessary, for example, to reinforce an infantry unit enveloping a center of resistance, a small group of batteries may be detailed for this purpose. However, infantry should not be overburdened with guns since each gun requires attention and considerable care. Such decisions should be made in advance in order to avoid the necessity of changing the plans.

Maneuver requires time, and while maneuvering, the artillery has to cease firing for a certain time. Consequently, the maneuver should be used only when changes in range and deflection cannot bring the desired results. Sometimes it is sufficient to shift observation posts slightly to one side to be able to accomplish the mission without displacing.

Russian Strategy and Tactics

Digested at the Command and General Staff School from an article by Captain W. R. Young, MC, RA, in *The Fighting Forces* (Great Britain) October 1944.

ON 13 July 1943, the Russians finally blocked the German thrust in the Orel-Kursk sector. Two days later they began the offensive which, with hardly a pause or a setback, brought them across the whole extent of German-occupied Russia into Poland and Rumania.

The Red armies had tremendous natural obstacles to overcome in the broad rivers, the marshes, the weather, the mud, and not least, the immense distances. But the soldier, whose main problem is always how to overcome the obstacle of human resistance, will be more interested in the fighting—in the strategical and tactical aspects of this remarkable campaign, the longest and best sustained offensive in modern history.

For this was no blitzkrieg against weak, poorly equipped, and indifferently led forces; nor was it merely a rapid following up of an enemy who was retreating according to plan. The German armies, though weaker in numbers than in earlier campaigns, were formidably strong—*and they were on the defensive.* They had had two years of experience of war conditions in Russia; they had had time to build up fortified positions of great strength; they were better equipped than ever before; and they were directed by some of the best modern military brains.

As for their retreat being "according to plan," we need only note that this did not prevent the occurrence of the bitterest sort of fighting in the many "hedgehogs," bastions, and bridgeheads which held out till encircled or till retreat was the only alternative to encirclement. Large forces were engaged in these actions, which showed none of the characteristics of rearguard tactics; and it seems clear, indeed, that the planning, if there was any, of the German retreat, must be credited to their opponents.

The general conclusion we must draw is that this Russian campaign was a first-class match between first-class opponents, who were both doing their utmost to win.

The situation in Russia, once the fronts had been stabilized, was that each side held a line which stretched from sea to sea. There were no open flanks on land. Our examination, therefore, of Russian strategy is simplified. For an army faced with a continuous front has no alternative but to attempt to penetrate it; so one factor in the Russian plan of campaign was preordained.

Now a penetration, if carried out with overwhelming forces and in blitzkrieg tempo, can finish a campaign in a matter of weeks or even days. But such a result cannot be hoped for when the defending army is strong and of first-class quality, nor when the space occupied by that army and its communications is too vast to be covered in one rapid operation. All these conditions exist in the Russian theater, and Soviet strategy has been modified to suit them. Having made a penetration at one point, the Russians thrust deeply through the gap; but sooner or later they come up against the obstacle of space or of the enemy's concentrations. They find that they have still many miles to go to reach a vital objective, that they are presenting a dangerously long flank to the enemy's counterstroke, that they are faced by a brick wall. So they consolidate their wedge as a bridgehead for future development—and then start an entirely new offensive in another sector.

Observers have noted that this launching of a succession of offensives at various points of a continuous front has an affinity with the Haig strategy of 1918. But there is an important distinction on the tactical side in that, unlike the British offensives in 1918, which were essentially linear in character, the Russian thrusts are always attacks in depth. However narrow the gap that has been made, Soviet cavalry, tanks, and infantry press forward boldly through it with

no inhibitions about limited objectives, exposed flanks, or vulnerable communications.

"The Red Army's technique," claims Major General Isayev, "of an ever-growing development of offensive operations *along the front line as well as in depth* marks the emergence of an absolutely new form of military art. In the . . . summer and autumn campaigns of 1943, the Red Army's offensive operations, surging into being one after another, merged into one tremendous battle, unified by one plan on a tremendous front. This *uninterrupted* development of *blows in depth* as well as of *frontal* blows on an *ever-increasing scale,* is one of the characteristics of Stalin's art of leadership."

Strategically, it may be said, the Russian command have never visualized a decisive breakthrough. But the Red Army's tactical methods are very much of the breakthrough type. So in due course, as the offensive works up to a crescendo, we shall, no doubt, see a decisive breakthrough on a strategic scale.

But we shall expect a certain "linearity" in the meantime.

The "Haig strategy," of course, is only practical for an attacker if he has a considerable numerical superiority over his opponent; or if, by reason of better lateral communications, he can transfer his forces from sector to sector more rapidly than the defender can. Now the latter condition cannot be regarded as a factor in the Russian success, for, at the start of every battle, the Germans have held the advantage in the matter of communications. Can we, then, attribute this success mainly to superiority in numbers?

The Soviet command has not had to transfer forces over long distances in order to launch its succession of widely separated offensives. A merely local movement of troops has been sufficient to create the necessary concentration. But it is misleading to explain the persistence of the Russian advance as due to numbers alone—to the weight of the steam roller. For if, as has been stated, the Russians outnumber the Germans in the ratio of three to two, that ratio has not hitherto been considered adequate to promise success for an attack. So we must seek an explanation elsewhere, and in our search we may well accept a hint from a Russian general of the past. "It is not numbers," says Suvorov, "so much as skill that counts in war."

In Russian tactical methods we find the same combination of width and depth which characterizes their strategy. Mention has already been made of infiltration and the bold exploitation of gaps, which are features of their attacks in depth. These are clever tactics, which produce results by psychological rather than by physical pressure—results wholly out of proportion to the effort expended.

They are not, however, peculiarly Russian tactics, being indeed copied from the Germans. But there is a greater indirectness about the Russian methods. Whereas the Germans tap along the front to find a soft spot and then concentrate large forces against it, the Russians seem rather to exert pressure over a wide front and press forward where they can, even with weak forces, relying on the moral effect of their threat to the enemy's flanks and rear.

"The Germans," writes Colonel Gavrilov, "strive first of all to discover weak points in the Soviet defense . . . They send ahead . . . groups of automatic riflemen on motorcycles or light tanks . . .

"At points where the Nazis encounter an appropriate fire resistance, they immediately retreat, fling themselves along the front in another direction, and start swooping again."

The Russian tactics, on the other hand, are marked, as Liddell Hart has recently observed, by "a baffling dispersion instead of orthodox concentration."

An example of the width element in Russian offensive tactics is seen in the crossing of the Dnieper.

"The Germans," says a report, "are flinging their reserves into the fighting, but are unable to snatch the initiative from Soviet hands, because the crossings are being made *along such a wide front* that they do not know where the *decisive blow* will be struck. As soon as they have concentrated the greater

part of their forces in one sector, Soviet units capture strongpoints in another sector, and the enemy has to rush his units to cope with the new threat."

The result was the collapse of the "Dnieper line." But here again Liddell Hart is ahead of history. Talking about "dispersed advance with distributed aim, i.e., against a number of objectives simultaneously" he adds the parenthesis: "Under the new conditions of warfare it may happen that the *cumulative* effect of partial success, or even mere threat, at a number of points may be greater than the effect of complete success at one point."

Dispersed attack seems, indeed, to be the right method for forcing a continuous water obstacle. At any rate, it is the method adopted by the Russians, and it has repeatedly proved successful.

It is to be noted, however, that the account of river crossing, which has been quoted, refers to a "decisive" or "main blow." This is due to the lingering influence of "orthodox concentration" or *Schwerpunkt* mentality, which is already beginning to date. For the truth is that there is no "main blow" in a dispersed assault crossing of a river any more than there is when the tide comes up the beach.

So far, then, we find that the peculiarity of Russian vis-à-vis German offensive tactics consists in their rejection of concentration in favor of dispersion. In the early battles, this dispersion seems to have been merely a stage in the preparation of a concentrated blow. But, as time goes on, the Russians come to use dispersion as an end in itself. They find that a steady pressure with moderately strong forces along a wide front will find or make the gaps which they know so well how to exploit. And their method of making the gaps is often characteristically indirect. By staging a demonstration at "A" they induce the Germans to withdraw forces from "B"—and "B" becomes a gap.

It may be said, indeed, that as the Russian tactics have developed they have become less and less "orthodox" and more and more successful. For their dispersed attack is triumphing over concentrated defense—and often precisely because that defense is concentrated. For concentrated defense must guard only the most likely avenues of approach and can, therefore, be easily circumvented by an advance along a line of less expectation.

We may now sum up the conclusions to be drawn from the evidence examined. They are that:

1. Russian strategy and tactics both display the same characteristic—the combination of width and depth. The width of the Russian attack differentiates it from the modern German practice of concentrating all resources on a narrow front; the depth distinguishes it from the linear methods of 1918.

2. Numerical superiority has made this type of strategy possible, but that is not the whole explanation of its success. Due credit must be given to the skill and initiative of the Russian soldier. These are shown (a) in the way in which a penetration is developed into a serious threat, and (b) in the speed with which opportunities are taken.

3. The depth of the Russian attacks forces the defending commander to react. His reaction usually takes the form of concentration. This involves withdrawing troops from sectors not immediately threatened. This leaves those sectors vulnerable.

4. The Russians, being already deployed on a wide front, can and do seize the openings thus offered.

5. Every new attack sets up new pressures, so that the offensive, instead of "petering out," accumulates strength as it goes on.

For the last reason, if for no other, it may be claimed that the Russians have produced something new in the art of war.

With confidence in him who issues the orders, the man will always obey.
—From "Thoughts on the Training of German Soldiers," by a Captain in the German Army.

Terrain and Commander's Decision

Translated at the Command and General Staff School from a Russian article by Lieutenant Colonel K. Shulgin in *Krasnaya Zvezda* (Red Star) 1 November 1944.

COMMANDERS are often compelled to make decisions even when little information of the enemy is available. In such cases, they are guided primarily by tactical characteristics of the terrain. I have pondered over such decisions many a time, and here is the story of one of them.

The retreating Germans dug in and offered resistance near the village of Medzyanovo (see sketch). Our division was stopped. At that time, my regiment was in possession of Nova-Ves, and when my battalions ventured beyond the village limits they were fired upon from the hills overlooking the village from the northwest and southwest. The regiment was pinned down. The division commander, however, thought that a delay on our part would enable the enemy to fortify his new position for stubborn resistance. I was ordered to break through the enemy defenses, capture Medzyanovo, and exploit any advantages that might be gained.

After studying the map and reconnoitering the area with other commanders, I came to the conclusion that the attack should be launched along the creek. The creek was in a draw which led up from the village toward the enemy. It was between 200 and 300 meters wide and overgrown with tall shrubs. The regiment could penetrate the draw without being noticed by the enemy, wedge into the German position between the two hills, and, by an encirclement maneuver, threaten the Germans with an attack from the rear.

This plan of action seemed to be quite correct at the time, because the area facing my left flank was open and was plainly visible to the enemy and it could easily be taken under fire. A frontal attack on the hill covering Medzyanovo would result in many casualties inasmuch as accurate information of the enemy was not available and his machine-gun nests could not be neutralized by our artillery before the attack. So the decision was made, and the battalions were given their missions.

The first battalion left the village through the northwestern outskirts and, taking a concealed route through the vegetable gardens, entered the draw. The Germans, in the meantime, kept the approaches to the village under a weak machine-gun and mortar fire, and it seemed as if they had not noticed the movement of the first battalion. After this battalion had penetrated the draw to some extent without meeting any strong fire resistance, the second battalion followed. As a diversion, our artillery engaged the enemy facing the left flank of my regiment.

Everything was going very well. But when the last company entered the draw, the Ger-

mans opened up with machine guns, mortars, and artillery. The whole creek area must have been surveyed for flanking and oblique fires. It was obvious that the Germans had watched this area and had noticed the movement of our battalions. I had to admit to myself that I had made a hasty decision. What was I to do now?

It was quite clear that the regiment was caught in a trap, that the plan of the attack was poor, and that it could be carried out only at the cost of unjustified losses. The commander of the direct support artillery group was with me. I ordered him to lay down a barrage on the slopes facing the draw in order to deny the Germans observation, and to suppress as many enemy weapons as possible. The battalions were ordered to withdraw under the cover of the artillery fire.

When the second battalion was leaving the draw and entering the village, I remembered a very wise rule I learned some time ago: "Studying the terrain, consider not only the interests of the attacker but the interests of the defender as well. Think not only for yourself but also for the enemy." In this case, from the enemy's point of view the area overgrown with shrubs was a definite threat to him, and it was logical to expect that the draw would be taken under fire.

After thinking it over for a few minutes, I got an idea for a new decision. Inasmuch as the enemy had taken this area under fire, it meant that he was afraid of our attack in this direction. Consequently, it would be wise to let him think we were attacking here and, to make doubly sure, make him believe that this was our main effort. I got in touch with the commander of the battalion which still remained in the draw, and told him to leave one company in the bushes and reinforce it with machine guns and mortars. Supported by artillery, it was supposed to continue moving ahead in a demonstration action.

When it became dark, I decided to regroup my units and to attack the hill at night, straight over the open field. The division commander approved my new plan.

The company in the bushes could not get very far and had to dig in. Fearing the attack, the Germans were more vigilant. That they were worried about this sector was obvious from the fact that even before dark about a company of Germans had gathered on the slopes of the hill northwest of the village. They probably intended to counterattack our company dug in in the bushes. But by the fire of our company and our artillery, the enemy group was dispersed and thrown back.

At night, two of my battalions, which had been assembled in the southeastern part of the village, began advancing toward the hill. In the meantime, our artillerymen and machine gunners continued firing on the enemy on my right flank as a diversionary measure. The skirmish lines of the battalions were noticed by the Germans only when the men were near the trenches. Enemy machine gunners managed to open fire, but it did not continue very long. My battalions, using their own weapons, machine guns, mortars, and antitank rifles, quickly suppressed the machine-gun nests of the enemy. My men broke into the trenches and had the entire hill cleared of the enemy long before dawn. Early in the morning, on the heels of the withdrawing Germans, we broke into Medzyanovo and seized it after a short engagement.

At that time, the two companies which had been withdrawn from the draw were moved into the breach, while the main force of the regiment struck a blow to the northwest in order to get into the rear areas of the enemy group still holding the advance of my right flank. This maneuver was executed so rapidly that the Germans could not take any countermeasures. When they saw our men in the rear of their trenches, they abandoned the hill and withdrew to the northwest.

This episode proves once more that triteness has no place in the tactical study of the terrain. Seemingly advantageous terrain features often prove to be disadvantageous. I did not consider other elements of the situation and based my decision on the terrain only. That is why the initial plan of

action seemed best. When we came to it, however, the draw turned out to be unsuitable for the main attack but ideal for a demonstration action.

Thus, a consistent and correct decision can be made only on the basis of the terrain, the enemy, and all other elements of the situation. Under all circumstances and in all situations, the commander should try to get some information of the enemy, and reconnaissance in force is the best way of doing it. If, for one reason or another, no information of the enemy is available, the terrain should be studied critically and thoroughly, and the enemy should be attacked where he least expects it. In other words, we should employ the element of surprise even when, from the viewpoint of the attacker, the terrain is not quite favorable. In the foregoing episode, the attack on the hill with open approaches seemed distinctly disadvantageous at first. But at night and with the help of a demonstration action on the right flank, the element of surprise helped us accomplish our mission.

Commanders are likely to make incorrect decisions, just as I did in the above example, and that is the reason why they should always be ready to regroup their troops in the course of the battle to conform to changes in the situation.

German Navy Versus Soviet Navy

Translated and digested at the Command and General Staff School from a German article by Erich Glodschey in *Völkischer Beobachter* 5 October 1944.

THE combat situation in the naval operations against the Soviets has undergone a spatial change as a result of the capitulation of the weak governments of Rumania, Bulgaria, and Finland: the Black Sea and the Gulf of Finland have been turned over to the Soviets.

Since the summer of 1941, the Soviet Baltic fleet had been shut up in the innermost corner of the Gulf of Finland. Light German naval forces had carried on the task of maintaining a watch over the highly successful mine and net barricades in the gulf. They prevented not only the Bolshevik surface vessels but also the very numerous Soviet submarines from escaping from Kronstadt into the Baltic. Now the fighting has shifted to the Gulf of Riga where the Soviets, after the occupation of Reval, Hapsal, and Pernau, have gone over to the islands of Vorms, Moon, and Dagö, and apparently have their eyes on Ösel.

Up to the present, only light vessels belonging to the Soviet fleet have escaped, keeping close to the coast, from the heavily mined waters of the Gulf of Finland. But air attacks on German convoys have extended farther out over the Baltic. What the larger remaining war vessels of the Soviets will do remains to be seen. The Bolsheviks have announced that the older battleship *Oktyabrskaya Revolutziya*, the cruiser *Kirov*, and a few destroyers have been made ready to sail to provide a support for the operations of the minesweeper formations, speedboats, and submarines. But they cannot count for years yet on the completion of the numerous major Soviet vessels on the ways at Leningrad. It goes without saying that the German Navy, whose domination on the Baltic has been an established fact since the beginning of the war, is ready to meet all eventualities that may arise on the Baltic from the events in Finland.

Though the fighting against the Soviets in the Baltic is proceeding vigorously, the Black Sea at the southern end of the eastern front has dropped out of the picture as a theater of naval warfare. During the first World War, the German Navy accomplished daring feats in the Black Sea. At that time we had the battle cruiser *Göben* and the light cruiser *Breslau* at our disposal there. These formed the backbone of the Turkish fleet, which was, in the main, antiquated yet powerful. In the year 1941, however, there was

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not a single German war vessel in the Black Sea. The Rumanian fleet possessed only four destroyers, four gunboats, one submarine, and a few auxiliary vessels. On the other hand, the Soviets, in addition to the many unfinished vessels under construction at Nikolayev, possessed one battleship, nine cruisers and torpedo cruisers, twenty destroyers, forty to fifty submarines, and numerous speedboats and smaller war vessels.

In the Black Sea, which was isolated from the naval warfare of the oceans, missions having to do with land warfare naturally played a leading part. When the eastern front reached the Sea of Azov and beyond, an extensive water transport system was established which carried several million tons of supplies. A second mission falling to the lot of the war vessels was their intervention in the fighting in the coastal areas. In addition to this, the enemy supply lines which crept along close to the Caucasus coast were attacked to as great an extent as possible. For this purpose, with all means that could be improvised, light German naval units had to be brought to the Black Sea. Minesweepers were brought by way of the Danube, speedboats followed, and later even submarines of the 250-ton type. Submarine chasers and similar convoying vessels were built of material at hand or which had been captured. The shallow-draft assault boats proved their value as they did on all European coasts. On the Sea of Azov, naval artillery lighters often bombarded Bolshevik positions.

The heavy naval units of the Soviets which, after the loss of Sevastopol, had sought refuge in Poti and other ports of the Caucasus, in spite of the superiority which remained theirs even after their heavy losses, did not venture out to engage in any larger operations. This situation did not change, either, when the Soviets were able to push their land front forward again. In the hard fighting on the part of small craft in Kerch Strait, in the transportation of supplies for and the later withdrawal from the Kuban bridgehead and the Crimea, the light German naval craft were able to make their way through the defense put up by Soviet submarines and aviation. From the Crimea, for example, 124,800 men were brought back over a long stretch of sea, a particularly outstanding feat on the part of German naval forces on the Black Sea, which at first was accomplished under Vice Admiral Kieseritzky, and after he had been killed at the end of 1942, under Vice Admiral Brinkmann.

It was nothing connected with naval operations which brought these operations to a close on the Black Sea. The treason of King Michael turned the Rumanian ports over to the Soviets, who immediately afterward seized Rumania's naval forces. The German war vessels on the Black Sea, however, went on destroying Soviet ships and firing on Soviet troops along the coast even after the treason of Bucharest. The larger German boats were unable to get up the Danube and were therefore scuttled. Nearly a hundred small vessels, such as combat boats, minesweepers, tugs, etc., were taken up the Danube.

French Air Force

Digested at the Command and General Staff School from an article by General de Division Aerienne Martial Valin in *The Aeroplane* (Great Britain) 28 July 1944.

General Valin has been, under General de Gaulle, largely responsible for the regeneration of the French Air Force since the Armistice of 1940, when a gallant few determined that their Service should fight on and build itself up again outside France.

PERHAPS there is no better way of starting this review of the activities of the French Air Force since 1940 than by describing the

important part which it is playing at this moment on all fronts.

In Russia the "Normandie" Fighter Group, equipped with the most modern Russian equipment, YAK-9's, continues, under the command of Lieutenant Colonel Pouyade, to earn the admiration of our Soviet Allies.

In Italy a number of bomber groups have been operating throughout the long months of the Italian campaign. Among them is the "Bretagne" Group, which, from Lake Chad to Tunisia, led General Leclerc's army to its meeting with the French armies in North Africa. This unit is equipped with Marauders.

French Fighter Command has been given the guard of the western Mediterranean. Equipped with Spitfires, it protects convoys, carries out sweeps, and intercepts the enemy's long-range bombers. Some groups have recently received Thunderbolts and Airacobras. The recent operations in the capture of the Island of Elba and all the reconnaissance photographs on the Italian Front and in the south of France are among their latest missions.

Finally, in Normandy, from the dawn preceding the invasion the medium bombers of the "Lorraine" Group had the job of laying down a smoke screen in front of the landing barges. Fighters of the "Ile de France," "Alsace," "Berry," and "Cigognes" Groups formed part of the fighter cover for Allied landings. All these units completed up to four sorties a day, and during these hard opening weeks of the campaign were able to find little time for sleep.

Heavy Halifax bombers of the "Guyenne" and "Tunisie" Squadrons took part in the smashing of enemy troop concentrations along with the American Fortresses and Liberators and the British Lancasters and Halifaxes.

Besides the groups already mentioned, units of the Royal Air Force include on their strength a large number of French pilots detached from the French Air Forces in Great Britain. In Mosquitoes they take part in night fighter and in pathfinder operations. In Typhoons, especially in the groups detailed for ground-level strafing, many Frenchmen have built up a fine comradeship with the British Allies. They derive special satisfaction from low-level attacks where the pilot fires his rockets as close as possible to the target. This form of attack suits our temperament very well.

When, on 18 June 1940, the French squadrons which managed to reach French North Africa received orders to dismantle their aircraft, many thought that France had disappeared from this war. And few realize the consequences of the heroic resistance of the French Air Force during the Battle of France on the events which followed during the sad year of 1940, the help given by the crews who rallied to General de Gaulle's appeal, and the importance of the air bases in French Equatorial Africa to the development of operations in the Middle East. This article may help to show that even if France has not been in a position to wield such powerful air units as the RAF and the American Air Force, she has, nevertheless, played an effective part in the present conflict ever since 1940, and that events might have been very different.

It must be recognized that the French Air Force, in destroying in an unequal combat nearly 1,000 enemy aircraft, to no small extent assisted the task of the RAF. One must realize how these 1,000 aircraft and crews might have assisted the enemy in the desperate fight for the mastery of the air which followed—a fight which practically came to an end owing to lack of personnel.

In the Middle East, the support given by the French Air Force was much appreciated, for at that time, as is now well known, the units of the RAF in this theater of war were neither very well equipped, nor very numerous. The Free French No. 1 Fighter Squadron played a brilliant part in the defense of Tobruk in the spring of 1941.

A French reconnaissance flight was formed at Aden and equipped with Martin Marylands. It played such an important part during the evacuation of Somaliland in July 1940 that it was called "The eyes of the High

Command of Aden." There are now only two survivors of this formation.

In Great Britain, volunteers from Free French Air Force units, at first as individual pilots with British squadrons, then as entirely French formations, did their utmost to help their British comrades. The squadrons have been named after those of our provinces which were hardest hit under the German yoke: Alsace, Lorraine, Ile de France —they all fought over Great Britain with noticeable success.

Since French North Africa resumed its fight against the enemy in 1942, our fighter squadrons have played an active part in the liberation of Corsica. They also patrolled the Tunisian and Algerian coasts protecting the convoys. At Bastia the results were most successful; in a few minutes eighteen enemy aircraft were shot down. French bomber and reconnaissance squadrons are working in close cooperation with the American Air Force.

Now for a few words about the parachutists who form part of the French Air Force. It is sufficient to mention that besides destroying German equipment of all kinds they blew up 170 aircraft on the ground in the Libyan desert. Some of these units from Cairo rejoined at Algiers, having passed through the German lines during the thick of the Battle of Tunisia.

The RAF has contributed not only to the combat operations themselves but to the realization of the great transport arteries which circumstances rendered indispensable.

It may well be asked what would have happened in the Middle East had the only means of access to Egypt been around the Cape of Good Hope. By keeping control of the Tchad and all the air bases of Equatorial Africa, the Free French Forces enabled thousands of airplanes to be flown to Egypt. This route, passing through Lagos, Kano, and Fort Lamy, was used by the transport airplanes coming from England which at that time went via Lisbon, Bathurst, and Lagos. War airplanes landing on the Gold Coast took off at Takoradi. Fighter aircraft and lightweight bombers protected each other over this dangerous territory. It was a familiar sight to see one Blenheim surrounded by several Hurricanes arriving at Fort Lamy—rather like a mother bird with her chicks.

From 1942, aircraft coming from the United States flew via Brazil and the South Atlantic. American bombers arrived also either by the above route or by the Ascension Islands and Pointe Noire, Equatorial Africa. There we constructed an airdrome which does justice to this up-to-date harbor—the only one in existence on the West African coast between Dakar and Cape Town. The maintenance of control over these territories by the fighting French made possible a large economy in shipping and, more particularly, in time; a matter of two months on the sea journey was saved. In addition, aircraft, reinforcements, and commanding officers could thus be taken to the Middle East by this French Equatorial African air route.

In spite of inadequate means and unfavorable circumstances—which at times seemed hopeless—the French Air Force has carried on throughout the gigantic struggle and, in addition, has well deserved her share of honor.

It is the man who constitutes and who always will constitute the means of combat par excellence. It is he who serves the weapons and other military apparatus. If he wavers or succumbs, the best engines of war will be of no use at all. Even without weapons, the man is able to continue to fight as a result of the strength and intelligence with which nature has endowed him.

—From Colonel Frick's *Tactical Breviary*, quoted in *Revue Militaire Suisse*.

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